DEPARTMENT OF DEFENSE APPROPRIATIONS FOR 1987

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

HOUSE OF REPRESENTATIVES

NINETY-NINTH CONGRESS

SECOND SESSION

SUBCOMMITTEE ON THE DEPARTMENT OF DEFENSE

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DEPARTMENT OF DEFENSE APPROPRIATIONS FOR 1987

WEDNESDAY, MARCH 12, 1986.

AIR FORCE AIRCRAFT PROCUREMENT

WITNESSES

HON. THOMAS E. COOPER, ASSISTANT SECRETARY OF THE AIR FORCE, RESEARCH, DEVELOPMENT AND LOGISTICS

LIEUTENANT GENERAL BERNARD P. RANDOLPH, USAF, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT AND ACQUISITION

INTRODUCTION

Mr. CHAPPELL. The committee will please come to order.

Today, the committee will conduct hearings on the Aircraft Procurement, Air Force appropriation. The fiscal year 1987 budget request of $19,127,400,000 is about one-fifth of total Defense procurement funding.

The Air Force is proposing to buy 30 more F-16 aircraft this year while reducing aircraft spares, modifications, and ground support equipment by $4.6 billion, compared to the 1987 estimates contained in last year's budget to Congress.

Moreover, the Air Force intends to buy 258 more fighter aircraft in fiscal years 1987 to 1991 than a year ago, while proposing to cancel urgently needed trainer aircraft and rescue helicopter programs which have much smaller unit costs, because they are claimed to be "unaffordable."

Today's principal witness is Dr. Thomas E. Cooper, Assistant Secretary of the Air Force for Research, Development and Logistics. He is accompanied by Lieutenant General Bernard P. Randolph, the Deputy Chief of Staff for Research, Development and Acquisition. This is General Randolph's first appearance before the committee in this capacity, and his biography will be placed in the record.

General Randolph, the committee welcomes you and looks forward to your expert testimony.

Today's hearing will focus on the status of many ongoing Air Force aircraft production and modification programs. We also intend to discuss with you a number of management issues, acquisition policy, and your management of engineering change orders.

This session will be closed by a motion duly made and passed in open session in order that we may discuss classified material.

Gentlemen, it is a pleasure having you here today. Your joint statement will be incorporated into the record in full.

[CLERK'S NOTE.—The joint statement on the Fiscal Year 1987 Budget estimates, Aircraft Procurement, Missile Procurement, and Research, Development, Test, and Evaluation by Dr. Cooper and General Randolph and their biographical sketches will be printed at the end of this hearing. See page 146.]

Mr. CHAPPELL. Dr. Cooper, you may begin.

SUMMARY STATEMENT OF DR. COOPER

Dr. COOPER. Thank you, Mr. Chairman.

It is always a pleasure to appear and sometimes more so than others. This budget climate that we face is rather severe, and it is causing us some problems.

This morning, you have introduced General Randolph. This is his first appearance and it is a pleasure for me to appear with him.

I have previously appeared with General Russ, now our Four-Star Commander, and General Skantze

In the interest of time, I will submit my statement for the record, and take just a few minutes to give you an update on where we are in our aircraft programs, and I would like to spring from the update I gave you last year.

I will do this in three parts, talk briefly to you about our bomber program, bomber modernization, and move to our airlift program, mobility program, if you will, and then conclude by saying just a few words about our tactical aircraft program.

Mr. Chappell, I also would like to touch on a couple of items of special interest that we talked about last year, the first being the status of the F-100 engine program, and where we are in serviceable spare engines.

Last year, the chairman expressed concern about our downward trend in servicable spare engines. I believe we have gotten on top of the problem.

I will bring you up to date on our competition statistics. The committee expressed some concern last year about the percent of contracts and percent of dollars that we were competing. I think we had a good story to tell last year, and we have even a better story to tell this year.

BOMBER MODERNIZATION PROGRAM

Let me move now to just a very brief update of the bomber modernization program. As you will recall, the goal of our program is to maintain the effectiveness of the B-52 force in the near-term while we develop and deploy and enhance bomber capability for the future.

The plan contains three key elements. The first is to convert 98 of 167 B-52Gs and all Hs to cruise missile carriers, and to deploy 100 B-1Bs, and to develop and ultimately deploy the advanced technology bomber to meet future challenges.

In addition to that, we are also upgrading the avionics on the FB-111 fleet and reengining the KC-135 tanker fleet as well.

A brief update on how we are doing. Overall, we are doing very well and staying right on track. Relative to equipping the B-52 with the cruise missile, we have now equipped all five B-52G squadrons with cruise missiles, and they are operational.

At present we are in the process of equipping the B-52H with cruise missiles, and I think the last I checked, we had about 15 out of a total of about 96. That is B-52Hs that we are equipping with cruise missiles, so that program is going well, right on track.

The B-1, that is one of the programs that we take tremendous pride in, and it is one of Secretary Weinberger's pride and joy, and I just tell you, that it continues to stay on schedule.

We delivered the first operational B-1B to Dyess Air Force Base on June 29 last year, and I mentioned that to the committee last year. That is an interesting date, because that was 30 years to the day since we delivered the first B-52, so it had been 30 years since we delivered the first B-52 to when we delivered the B-1.

Mr. **Chappell**. What is that date again?

Dr. **Cooper**. June 29, 1985. It was June 29, 1955 that we delivered the first B-52.

Mr. **Chappell**. Didn't take us very long to develop that program?

Dr. **Cooper**. It took a little time, Mr. Chairman.

Mr. **Chappell**. Much of that time was spent in RDT&E. How many interim bombers did we have?

Dr. **Cooper**. The B-70. General Randolph's an old bomber jockey and might want to comment.

Mr. **Chappell**. He is too young to remember anything about the B-52.

General **Randolph**. No, sir.

Dr. **Cooper**. He is one of the few people in the Air Force that is older than the B-52.

General **Randolph**. That is right. There are not many of us left, Mr. Chappell.

Dr. **Cooper**. We delivered, now, four operational B-1Bs to Dyess, and they are on the ramp. Friday or Monday, we will deliver the fifth. We have a total of five in hand, shortly we will have six, and General Randolph will comment on this in his overview.

We should have the 15 B-1Bs delivered to Dyess by September that will give us the IOC, so all in all, that program is on track right now.

I do have to inject a note of concern. The deal with the Congress was that we would deliver 100 B-1Bs for $20.5 billion.

We still believe we can do that, but as a result of the cuts that we have sustained, we currently have only $19.6 billion in hand.

We are not requesting procurement funding this year, so that the total in procurement that the Department has in hand is in this $19.6 billion. I am not ready to run up the red flag today and say the roof is caving in, but I would just caution that it may be necessary for the Air Force to come forward in the future and to require additional funding to complete that program.

I think you are——

Mr. **Murtha**. Still under $20.5?

Dr. **Cooper**. Yes, sir, and your bill acknowledged that last year, when some of the funds were removed.

We will try to do it at $19.6 billion, but it will be very difficult. The ATB continues to move apace.

Mr. **Murtha**. Did you mention the CBS report last night, they talked about their investigation of the B-1?

General **Randolph**. I saw that.

Mr. **Murtha**. Very favorable report, and they sent somebody out to look in great detail into the program, and they were very favorable to the program, and talked about this as the way the weapons system should be built.

The only thing that concerned me was they said we should spend more time in RDT&E, and don't put them out in the field so quickly, and we will get a better airplane, and I don't necessarily agree with that.

When you get a favorable comment, we should take it without criticizing.

General **Randolph**. We have to take the good comments where we can get them, but I did not agree with that statement, either.

In fact, that dead time, from the time the program was cancelled until the time we actually restarted, we really did not accomplish a lot in terms of development. We flew the airplane and learned a few things.

Mr. **Murtha**. It costs a lot more by waiting that long?

General **Randolph**. Certainly did.

Dr. **Cooper**. The challenge that faces us in the future on the B-1B, we have to continue to pay attention to the production program. We have still got to deliver 95 B-1Bs, and the bulk of that program is in front of us, in terms of delivering.

The logistics part is going to be a challenge, laying in the spare parts, tech manuals, those sorts of things.

Mr. **Chappell**. You say 95. You mean 100?

Dr. **Cooper**. We have taken delivery of five, and the six should—actually, it is being checked out right now. I can't say too much about ATB in this session, and I noted in another session, you had a lot of questions about ATB.

Mr. Chairman, we could do this at any time at your convenience, we should probably have a classified session at a higher level of classification, because some of the questions that were asked we can't comment on.

Mr. **Chappell**. We have one scheduled.

Dr. **Cooper**. OK. We have a presentation, and we would like to have the opportunity to go over that with you.

I understand that the show last night was very favorable to the B-1B, and some people think well, maybe the next shoe to drop is let's not build the ATB, but continue with the B-1.

I would like to tell the committee, it is our intent to do the ATB program every bit as well as we did the B-1 program, and hope it can be a little bit better.

That is my status report on the bomber program. It is going well.

AIRLIFT PROGRAM

The airlift program, and as you know, we have a goal that has been mandated in the Congressionally mandated mobility study to reach 66 million ton-miles per day of airlift capability.

As you are familiar with, we are building 50 additional C-5Bs to complement the 77 C-5As currently on the ramp.

We are in the process of buying 60 KC-10s. This is the last year of procurement for the KC-10 program.

For future needs, we are developing and procuring the 210 C-17s, and I might mention to you, this is the first year that we request procurement funding for the C-17. We think we have a program that, an airlift program, where the C-5s meld very nicely with the C-17.

As the C-5 comes off the hump—1992—as General Randolph will show you, as you come down off the plateau, C-5 and funding, aircraft delivery.

Mr. CHAPPELL. When was the last delivery of the C-5B?

Dr. COOPER. Mr. Chairman, I believe 1989. We should have 10 delivered by the end of the year.

General RANDOLPH. It is 1989.

Dr. COOPER. That is about the time when the first C-17s will start to come in, late in 1989, early 1990, so they come down and the C-17 starts to come in.

We are also enhancing our capability by modifying 19 747s to go in the enhanced program.

Mr. CHAPPELL. Is that the last of the modifications?

Dr. COOPER. Yes, sir, we are looking at maybe even getting a couple more for those funds right now.

Currently, 19 Pan Am 747s, and those will go with the one DC-10 we currently have in the enhanced aircraft fleet. We have talked about this, but how goes it with the mobility program?

We have accepted two C-5Bs today. We are on schedule, within cost, and we have returned money from the program primarily because of inflation adjustments. Inflation has been less than we thought.

There was an economic adjustment clause in there, so the program is costing less on that fixed price contract than originally thought. General Randolph will develop this in a little more detail.

The KC-10 program is a model program. We have used multiyear procurement on it. We take delivery of the KC-10s that we put on order in the same year that we order them. That is very unique in that regard.

Multiyear, using commercial techniques, has allowed us to do that. The C-17 is one of the priority programs in the DOD and entered FSD about this time last year, and as I mentioned, this is the first year that we will request procurement funding.

TACTICAL PROGRAMS

Let me move to the tactical programs. General Randolph has four or five slide briefings on this, so I won't develop it in detail, but we are continuing to follow the Tactical Fighter Roadmap we presented two years ago, and that goes to the heart of the chairman's question, why are we building more tactical aircraft than we proposed to you last year?

That has been a priority in the Department this year. It is one of Secretary Taft's priorities, and he wants to reemphasize how critical he thinks the Tactical Fighter Roadmap is.

You will see the Tactical Fighter Roadmap is back pretty well to where it was two years ago, when we first briefed it to you.

We had a momentary hiatus where we dipped down in the number of F-16s we were going to procure. We are proposing this year, that we build back up to 216, so we can continue to modernize and build that force structure to 40 tactical fighter wings.

We would like to get to 44, but in this budget climate, we can't do that and maintain the average age of that force at about 10 years.

In addition to that, over the last year, we have put on the books a competition that is of no small interest to this committee, and that is in the area of air defense.

That is above and beyond the fighters that we will show you in the Tactical Fighter Roadmap. We are proposing to procure, on a competitive basis, 300 air defenders, in the vicinity of 300.

General Randolph will talk about that more. We anticipate that that will be a very vigorous competition, not unlike the great engine war we had here a few years ago, and we know there will be a very, very close Congressional scrutiny, so we want to get the ground rules laid out correctly up front so everyone knows where the goal line is, and where the out-of-bounds markers are before the competition starts, and we are just about ready to pull the trigger on the gun, and plan to release the Request for Proposals on March 24, and then the game is on, so to speak.

F-100 ENGINE PROGRAM

The two special interest items, first the F-100 engine. When we talked to this committee last year, we were, I might say, in bad shape on serviceable spare engines for both the F-15 and the F-16.

As a matter of fact, we only had 39 percent of the serviceable spares on hand that we felt we needed. That was particularly acute in the F-15, where we only had 16 percent of the spare engines.

The numbers for the record are, I think, in the May time frame last year we bottomed out, and our goal for the F-15 was 108 serviceable spares, and we only had 17 on hand at our low point last year, 16 percent of what we needed.

We were a little better off in the F-16, reasonably good shape there, 46 out of the 59 we believed we needed. The chairman brought this up as an issue, and I committed to him that we would get on top of that problem.

In fact, one of the things I did, my military assistant at the time, who was an engine expert, we sent him down to San Antonio, and he is now running the program, so I have a belly button I can push there.

Mr. **Chappell**. Did the chairman mention the T-46 to you?

Dr. **Cooper**. Last year or recently?

Mr. **Chappell**. Recently.

Dr. **Cooper**. Through correspondence, he has. Just to finish that on the F-100, we are at an all-time high today, 83 percent of the serviceable spare engines that we need on hand.

70 out of 109 for the F-15, and we have more than we need for the F-16, 89 over 83. I will finish and exit stage right.

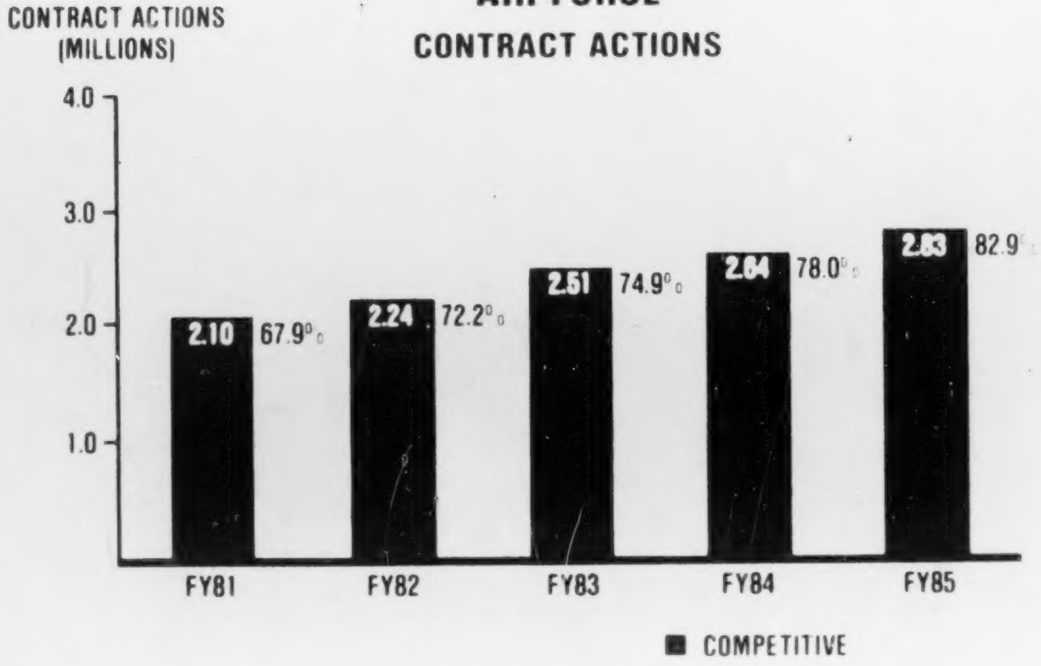
COMPETITION

I would like to bring you up to date on an item that the committee has expressed its continuing interest in, and if I could stand for a moment, give you our competition statistics, we are kind of proud of what we did last year.

I used this same format for you last year. I am going to show you two separate slides relating to competition, the first is the percentage of contractual actions that we have in the Air Force, and what percentage of those we do competitively, and there are three categories.

[Slide follows:]

AIR FORCE
CONTRACT ACTIONS



Dr. COOPER. The first is direct competition, where we actually completed those contracts in the year that is shown.

The second is follow-on competition. We at one time had a competition and now we are in a follow-on mode, an F–15 or a B–1, where we originally had competition, but now we can't have direct head-on competitions.

We have a staggering number of contractual actions that we do every year, and these are the ones that we score. There are others that are not scored for competition. We got 2.83 million contracts that we let last year competitively, and that is almost 83 percent of our contractual actions were by competition, direct head to head competition.

Mr. CHAPPELL. Dual or sole-source competition?

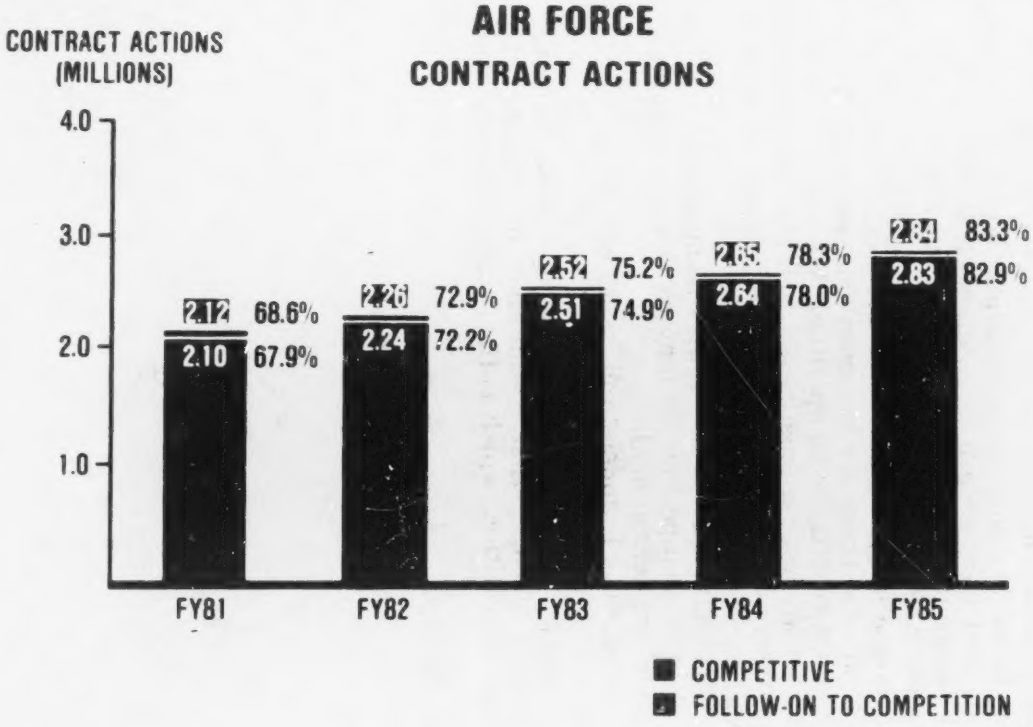
Dr. COOPER. Competition, it may be two or 10 people bidding, but more than one person bidding.

Mr. CHAPPELL. I understand that, but then you end up sole source?

Dr. COOPER. No, sir. You could end up sole-sourcing the following year, and if you did, that would then for scoring purposes be a follow-on competition, which is the second category, and if you will flip?

[Slide follows:]

AIR FORCE
CONTRACT ACTIONS



Dr. Cooper. Notice in that category, you will notice as far as follow-on, contractual actions, you go from 2.83 to 2.84, 10,000 contractual actions that are follow-on, a very small number, and in fact, the statistics don't change.

It is almost insignificant here. It won't be insignificant in terms of the dollars, because when you look at B-1 bombers, F-16s and F-15s, that may be one contract, but it is a large sum of money, and you will see that when we score the dollars.

Mr. Chappell. How much is multiyear?

Dr. Cooper. No, sir, we have not broken that out. We have several multiyear contracts that are follow-on competition, and don't get scored as direct competition. You don't compete with those.

General Randolph. If I may, you do compete at the beginning of the multiyear. It is a single contract, Mr. Chairman, so in these statistics, it will simply show up as a continuation of a contract that was started at the beginning.

Mr. Chappell. I guess the point I am trying to get at, once you go multiyear, once you award that contract competitively, are you going to stay with the sole source, or come back and develop dual sources?

Dr. Cooper. The B-1 is a case in point. F-16 is a case in point, but if we have the opportunity today, even in the multiyear environment, we have very vigorous competition in the F-16 program.

Over 60 percent of the F-16 program is competed today.

Mr. Dicks. Because of the subcontractors?

Dr. Cooper. Yes, sir, the engine, ejection seat, INS, radar warning set, jammer is competed, wheels and brakes are competed, and when you add that all up, over 60 percent, in fact, it is 63 percent on the F-16 where we also use multiyear.

The part that goes to GD on the F-16, only 25 percent of that goes to General Dynamics. Air frame fabrication and putting it together.

Mr. Dicks. You see now we have the F-16C, and that is the scaled down version?

Dr. Cooper. No, sir, we have within the F-16C program, we have blocks. We continually have been improving the F-16C. The F-16C, the primary difference between an F-16C and an A is in the radar. We are going to a more capable radar in the F-16C that will be AMRAAM capable.

Mr. Dicks. Excuse me, the CM is the scaled down version?

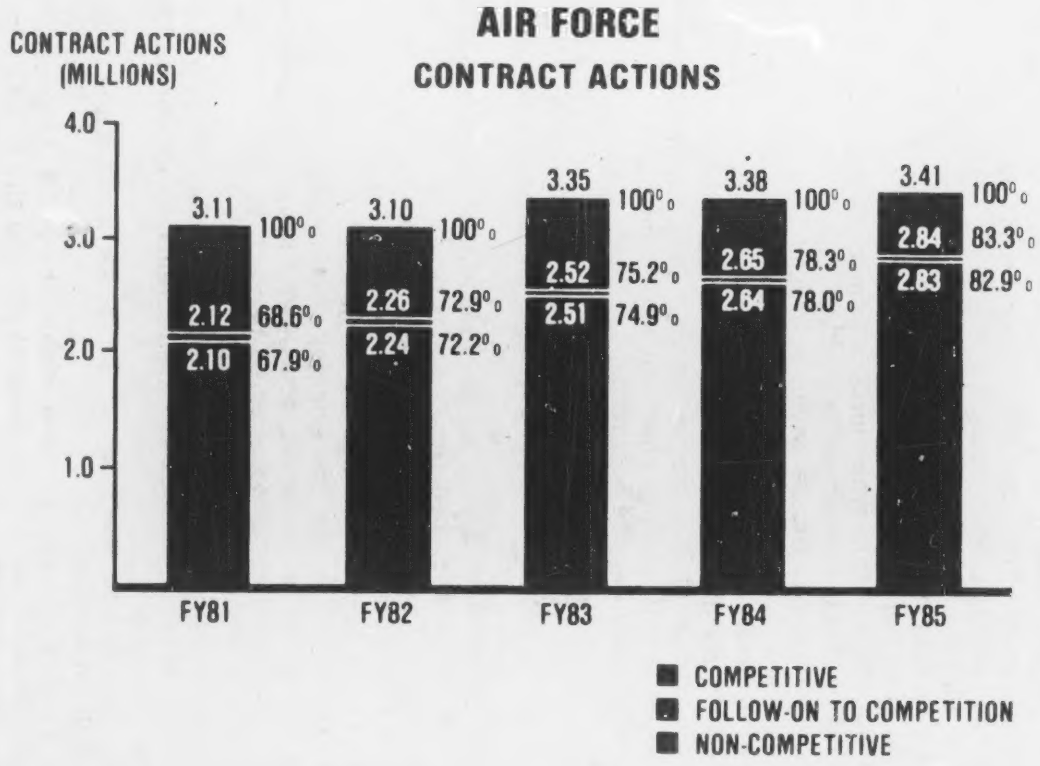
Dr. Cooper. Primarily the LANTIRN version of the F-16C, a block version.

Mr. Dicks. This what GD came in with? Was that the F-16?

Dr. Cooper. No, that was the F-16-SC. I will come back to that.

Mr. Chairman, I will get off this slide quickly, but I wanted to show you, we have had a very good trend in the Air Force in terms of contractual actions that are, I think, direct competition or follow-on.

[Slide follows:]

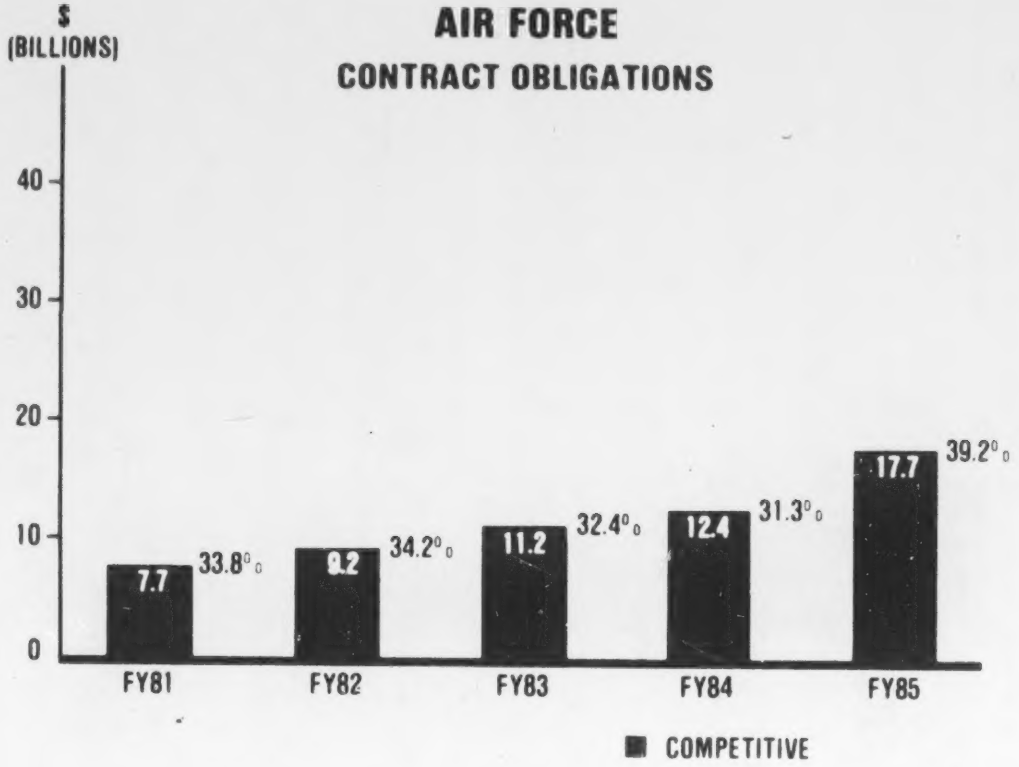

AIR FORCE
CONTRACT ACTIONS

Dr. Cooper. It has been increasing, percentage-wise, and last year, it was at an all-time high. Sole source contractual actions, we have the fewest sole source contractual actions in the Department of Defense.

Mr. Murtha. Is it saving us money to have more competition?

Dr. Cooper. Absolutely, no question about it. Next slide, quickly.

[Slide follows:]

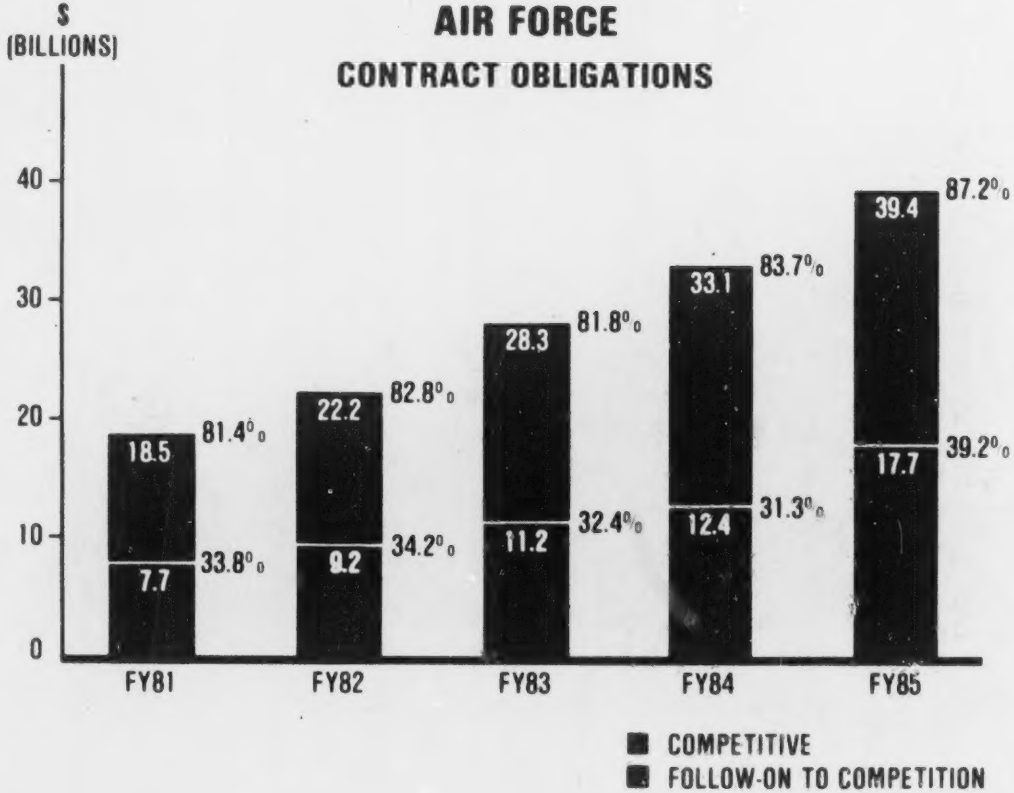


AIR FORCE
CONTRACT OBLIGATIONS

Dr. Cooper. Here are the dollars and last year was a banner year for the Air Force. We had direct competition on 39 percent of our dollars, all-time high $17.7 billion were direct head-to-head competition.

Flip it over.

[Slide follows:]

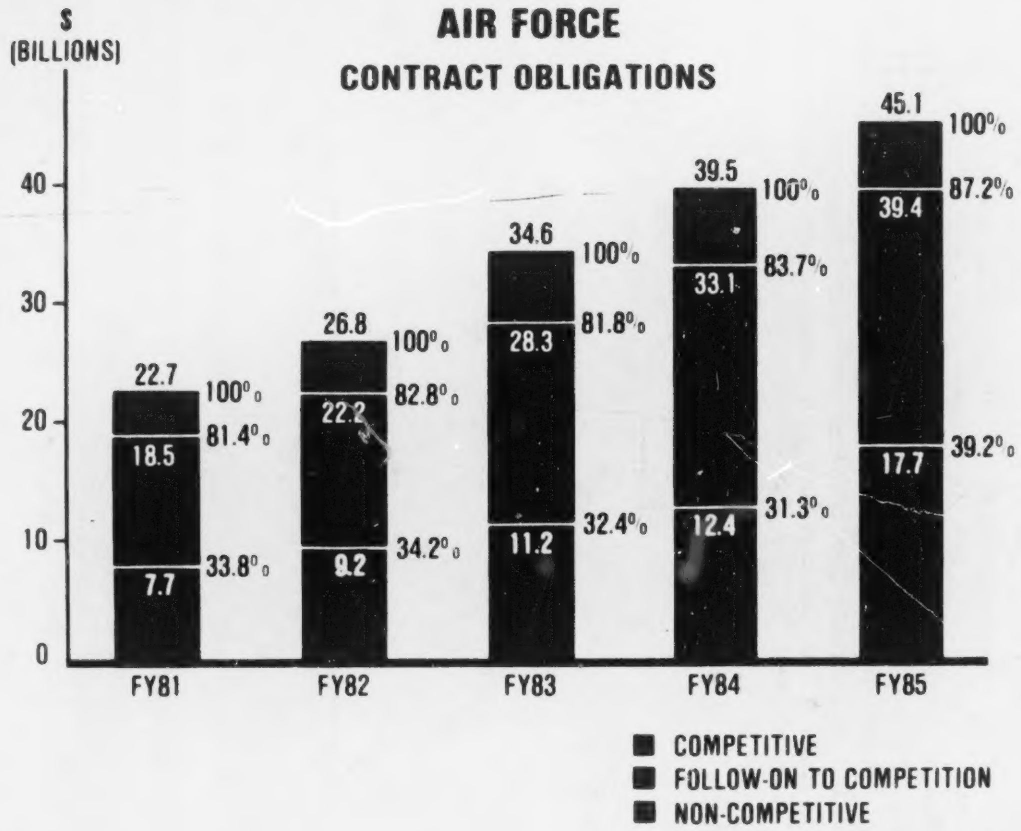


AIR FORCE
CONTRACT OBLIGATIONS

Dr. Cooper. The follow-on category, a relatively small number of contractual actions, look at the dollars that are contained in our follow-on contracts in the Air Force.

Again, F-16s, F-15s, B-1s, those aren't scored as direct head-to-head competition, although we have competition in every one of those programs, relatively few contracts and relatively large dollars, but in combination, between direct and follow-on competition, 87 percent of our actions last year were either direct or follow-on.

[Slide follows:]



AIR FORCE
CONTRACT OBLIGATIONS

Dr. COOPER. Only 13 percent of our dollars were sole source.

Mr. CHAPPELL. Doctor, define what you mean by direct and follow-on?

Dr. COOPER. Okay, direct in the year we award the contract we have head-to-head competition.

A follow-on would—it could be a winner-take-all or split the pie. A Maverick missile, head-to-head competition, split the pie and in the AMRAAM, and others, may be a winner-take-all, but those dollars are awarded directly as a result of competition.

Follow-on may have been under a head-to-head competition three, four years ago, such as on the F-16, and the F-16 wins it, and all follow-on contracts are sole source, and you don't have direct head-to-head, but you got the initial benefit of the competition.

This was the best year in Air Force history, last year, 39 percent. Our goal was 33 percent, and we exceeded it by 6 percent. Our goal this year was going to be 39 percent.

As a result of having already achieved that, we bumped it up to 42 percent, and I am proud to report to you that we are running ahead of that goal right now.

The red area, sole source, today as we speak with the contracts we have awarded today, we are less than 10 percent sole source in the Air Force, and that is unmatched in the Department of Defense.

You expressed a concern about it last year, and we are concerned about it. We have got a competition advocate that worries full-time about it. We have got a very good story to tell in the Air Force. I will commit to you this year that we are going to stay on top of this.

Mr. Chairman, that ends my presentation. General Randolph will run quickly through an overview of the Air Force procurement budget.

Mr. CHAPPELL. General.

SUMMARY STATEMENT OF GENERAL RANDOLPH

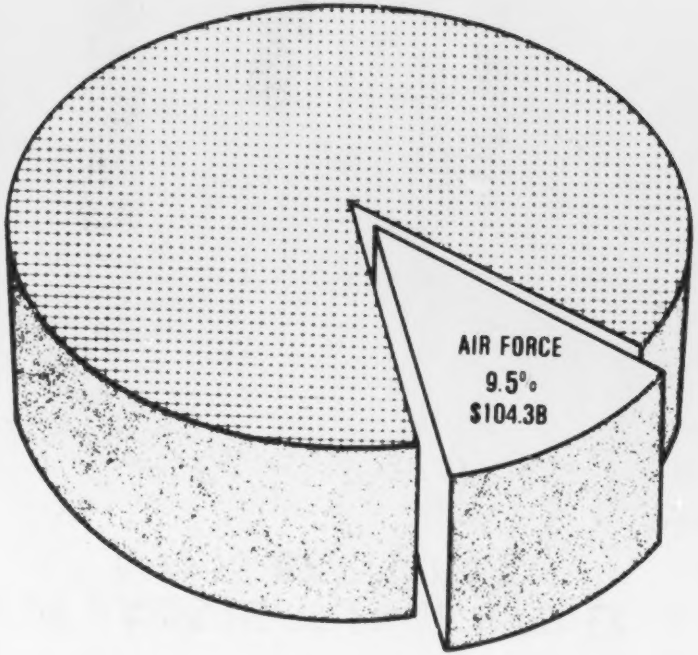
General RANDOLPH. I am pleased to have the opportunity to appear for the first time before the committee in this capacity. I have done this before in a slightly different capacity.

[Slides follow:]

FISCAL YEAR 1987 BUDGET REQUEST (PROCUREMENT)

Lt General BERNARD P. RANDOLPH

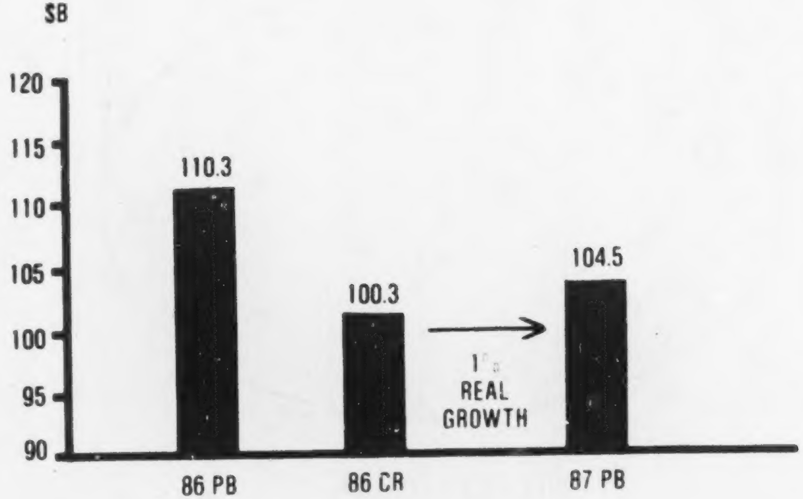
DCS/Research, Development & Acquisition
Headquarters United States Air Force



FISCAL YEAR 1987
FEDERAL BUDGET AUTHORITY REQUEST

TOTAL: $1,102.0B

COMPARISON OF FY 86 BUDGET AND FY 87 REQUEST



AIRCRAFT PROCUREMENT BUDGET

General **Randolph**. I have a few charts to give you a view of where we stand in the aircraft procurement area, starting with the macropoint. We are requesting $104 billion, 10 percent of the Federal budget. That $104 billion is less than, we wanted to point out, what we requested last year at this time, but we suffered quite a hit in the budget process. It is about a 1-percent real growth from the amount of money that was appropriated by the Congress to the Air Force last year.

[Slide follows:]

FY 1987 AIR FORCE BUDGET PRIORITIES

FY 87 priorities reflect commitment to "stay on course" and continue addressing improvements most vital to combat capability

- Modernize strategic forces (offensive and defensive)
- Improve readiness and sustainability of general purpose forces
- Increase airlift capability
- Modernize and expand tactical forces

and

- Improve ability to operate efficiently and effectively in space

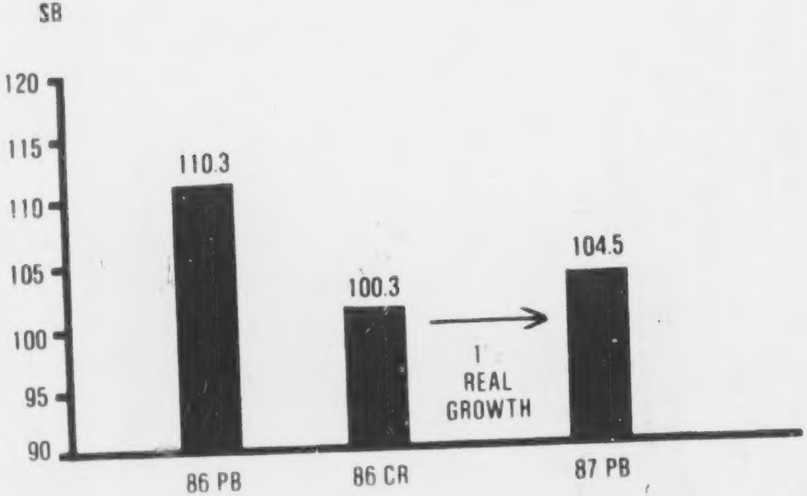
Mr. **McDade**. Is that off a Gramm-Rudman-Hollings number?

General **Randolph**. No, sir, that is before Gramm-Rudman-Hollings. The instructions, and I recognize that that causes the Congress some problems, the instructions that we have within the DOD is that we report the number that is in the FY 86 column of the FY 87 President's budget, and that number that you just saw is in the FY 87 President's budget, and——

Mr. **McDade**. Go back to the previous slide. Tell us what the impact of Gramm-Rudman-Hollings is.

[Slide follows:]

COMPARISON OF FY 86 BUDGET AND FY 87 REQUEST



General RANDOLPH. In terms of dollars?

Mr. McDADE. In 1986.

General RANDOLPH. The Gramm-Rudman cut was slightly less than 5 percent, 4.9 percent, something like that, so there is, in this case, it is easy, take $4.8 billion off that, so that is the difference.

That, of course, makes a difference in the real growth. It will be 2 percent instead of 1 percent that I show there.

Dr. COOPER. I have not gone back and verified this.

The interesting thing to me about this slide, though, I cannot recall in the 10 years I have been working in this environment, where in a subsequent year we requested less than we requested in the previous year.

You will notice last year we requested 110. This year, we are only requesting 104, so what that clearly shows is that we have reached the hump, and we are on the back side, we are coming down, for whatever that is worth, and that has been painful.

We recognize the reality of the budget situations but our budgets are clearly coming down, and I would be a foolish optimist to assume we will get $104.5 billion. We are going to argue and convince you to give us that, try to anyway, but you can see what is happening in our budget right here.

[Slide follows:]

FY 1987 AIR FORCE BUDGET PRIORITIES

FY 87 priorities reflect commitment to "stay on course" and continue addressing improvements most vital to combat capability

- Modernize strategic forces (offensive and defensive)
- Improve readiness and sustainability of general purpose forces
- Increase airlift capability
- Modernize and expand tactical forces

and

- Improve ability to operate efficiently and effectively in space

General RANDOLPH. This is the priority that we use in putting the budget together, and as you can see here, the priority order remains the same as it has been over the past several years. Of course, the President's strategic modernization program is on track, with the B-1 having its initial operational capability in September of this year, and the Peacekeeper, December of this year.

READINESS

The readiness story is a story we are proud of. In the Tactical Air Command, 85 percent of all of the airplanes, all of the fighters on the ramps within Tactical Air Command are in commission, and that is one of the best in-commission records we have had in many, many years in the Air Force.

I recall this very vividly, in 1980, when we had the terrible situation where the First Tactical Fighter Wing at Langley flunked an Operational Readiness Inspection because half of the airplanes weren't operationally ready. This is the kind of improvement that has resulted as a result of funds provided by the Congress.

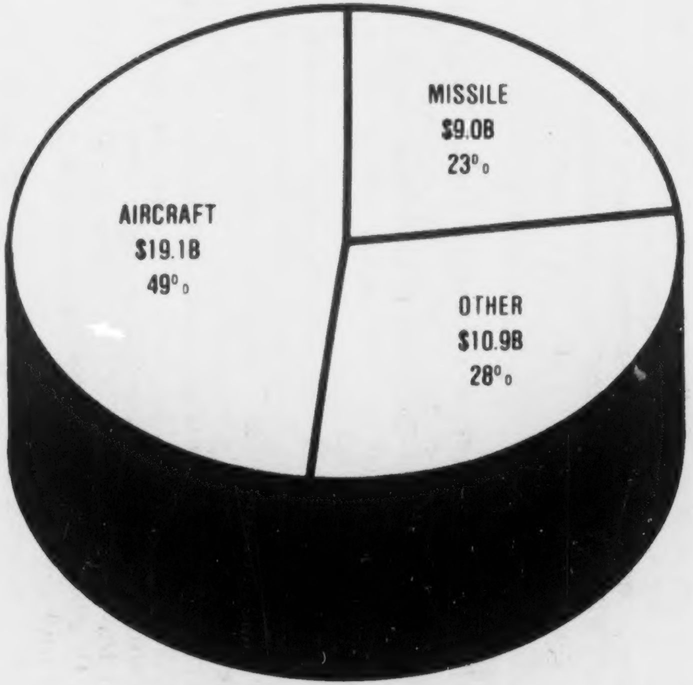
In the airlift world, we have delivered the second C-5B, nine C-5Bs will be flying the line this calendar year.

In the modernization of the forces, I will be talking about that, but this year, we have the best accident record in the Air Force that we have ever had.

It is a record 1.49 accidents per 100,000 hours, that is the lowest we have ever had. And that is the result of the fact that we are flying modern equipment, among others. Ability to operate in space, consolidated space operations center facility is in being now at Colorado Springs, and we have started initial operations from that facility this calendar year.

[Slide follows:]

FY 1987 AIR FORCE PROCUREMENT REQUEST
$39.0B



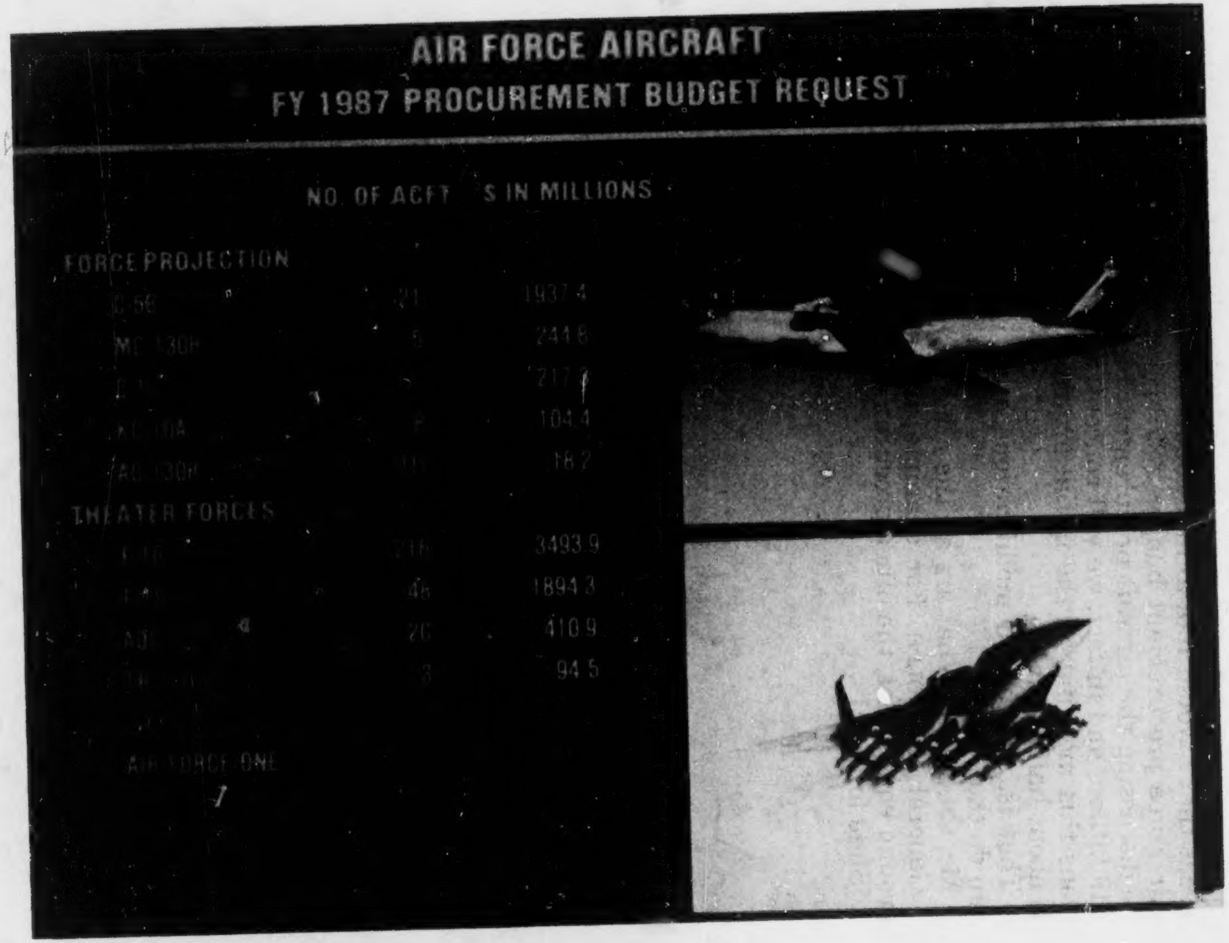
General **Randolph**. The airplane, we will concentrate on the aircraft procurement, and I will go immediately then to the general areas that I would like to talk about. $19.1 billion. This is the total Air Force procurement budget, $39 billion. This morning, we will be discussing the aircraft procurement piece of that, which is about $19 billion, and in fact, we will concentrate primarily in the discussions this morning on the initial acquisition of the aircraft, which is about half of that.

That is, spares and modifications, they will not be covered. We can do that.

Mr. **Chappell**. What are all the others?

General **Randolph**. For example, in the OTH-B radar, that is ground equipment, the other procurement area.

[Slide follows:]



AIR FORCE AIRCRAFT

FY 1987 PROCUREMENT BUDGET REQUEST

	NO. OF ACFT	$ IN MILLIONS
FORCE PROJECTION		
C-5B	21	1937.4
MC-130H	5	244.8
[illegible]	[illegible]	217.2
KC-10A	8	104.4
AC-130H	[illegible]	18.2
THEATER FORCES		
F-16	216	3493.9
F-15	48	1894.3
[illegible]	26	410.9
[illegible]	3	94.5
[illegible]		
AIR FORCE ONE		

General **Randolph**. I don't plan to discuss these subjects in detail as you see them on the chart. I have got two special areas to talk about.

SPECIAL OPERATIONS FORCES

One, the Special Operations Forces, and the other having to do with the fighter forces, and the fighter roadmap. I will briefly touch on those two, but I am ready to answer any questions you may have in those areas.

[Slide follows:]

AIR FORCE SPECIAL OPERATIONS FORCES

	MC-130	CV-22	AC-130	HC-130	HH-53	H-3
CURRENT FORCE	14 MC-130E	0	10 AC-130H 10 AC-130A	20 HC-130H 30 HC-130P/N	7 PAVE LOW	6 H-3
PLANNED BUY	21 MC-130H	80 CV-22	12 AC-130	--	--	--
PLANNED MODS	--	--	--	20 H MODELS TO P MODELS	12 OTHERS TO PAVE LOW	--
PLANNED FORCE	14 MC-130E 21 MC-130H	80 CV-22	22 AC-130	50HC-130 P/N	19 PAVE LOW	6 H-3

General RANDOLPH. In the area of Special Operations Forces, this has been a subject as you know of some considerable discussion, and I am pleased to report that the Air Force has stepped up to the wishes of the Congress to accelerate a number of these programs.

For example, this airplane here, the MC-130, is called the Combat Talon airplane, designed to use infrared radar and travel into potentially hostile areas with electronic countermeasures equipment. There are two versions, Combat Talon I, called the MC-130E, and the new version Congress asked us to put out into the field, Combat Talon II, the MC-130H. We had planned to have all those in the field by the end of fiscal year 1992, and the Congress asked us to move that up, and our present budget now calls for those airplanes to be deployed by the end of fiscal year 1990, so we moved that up two years. For fiscal year 1987, we are asking for five of the Combat Talon II airplanes.

The CV-22 we are doing with the Navy, and the Navy is in charge of that program, but certain things can be applied to the Air Force, and the Air Force is planning to buy the 80 CV-22s.

Dr. COOPER. That is the tilt rotor.

General RANDOLPH. The AC-130A, the gun ship. These A models are literally falling apart, and we have got to retire those posthaste.

We will keep the H models.

Mr. CHAPPELL. The gunship, is this an effective weapon?

General RANDOLPH. Yes, sir, in fact, in Vietnam, I was in an uncomfortable position one night where I ran out of ideas and airplane all at once. I was stuck there for the night, and there was a gunship that flew protection the entire night, and I am here to tell you he was very comforting while I watched him keep the bad guys away from us, so it is a very effective weapon. I have an emotional attachment to it, because of the experience.

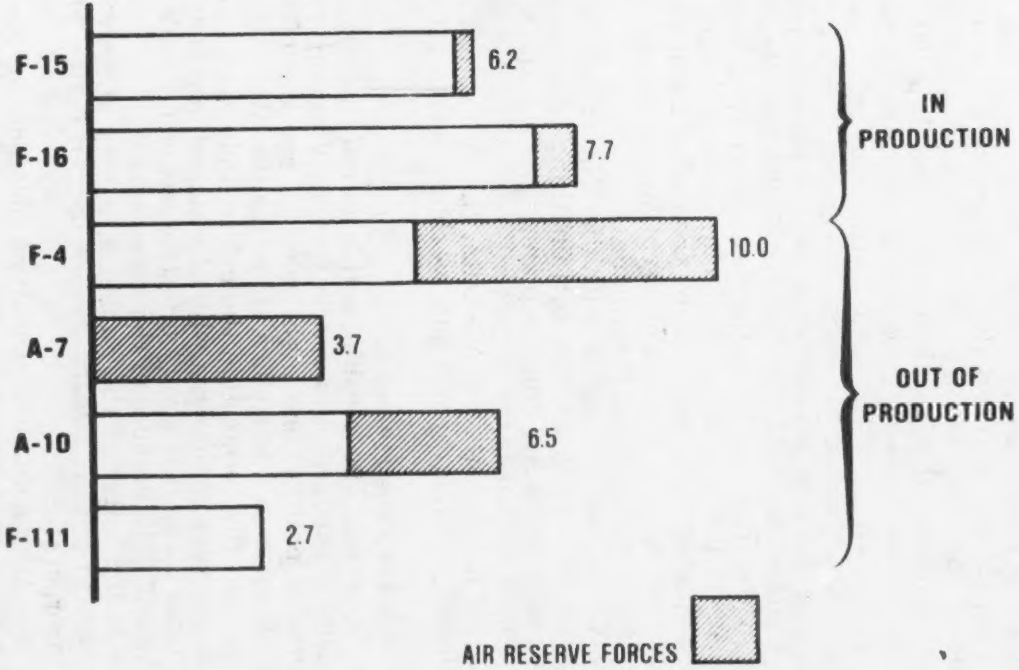
This is the latest of the gunships, a very effective weapon. We have learned a lot of lessons on how to do it better, and those have been incorporated.

We are asking for one prototype airplane in the development side for fiscal year 1987, but after testing we will put that into the operational inventory.

These are refueling airplanes, payload airplanes, which do, approximately in terms of avionics, the same things as you do here, but used for different kinds of missions, so that is the story we have got in the special operations forces, which is quite good.

[Slide follows:]

TACTICAL FIGHTER FORCE
MID FY86
36.8 TAC FTR WINGS (72 ACFT/WING)



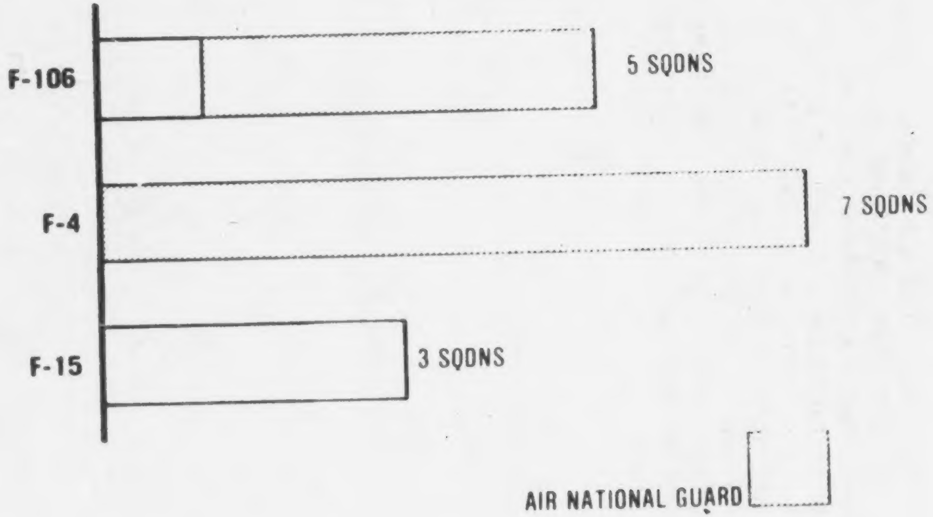
AIR DEFENSE FIGHTER FORCE

General **Randolph**. The air defense, fighter forces, and this is where we are just about right now, in terms of the fighter forces. The airplanes that you see here, the numbers of wings, and that is what these numbers are out here, and then in the green lines are those that are in the reserve forces, either the Air Force Reserve or the National Guard, and as you can see, a considerable number of the fighters are in the Guard and Reserves, and we continue to modernize those roughly at the pace of about four squadrons every year, so they can keep up with the modernization.

[Slide follows:]

STRATEGIC AIR DEFENSE FIGHTER FORCE

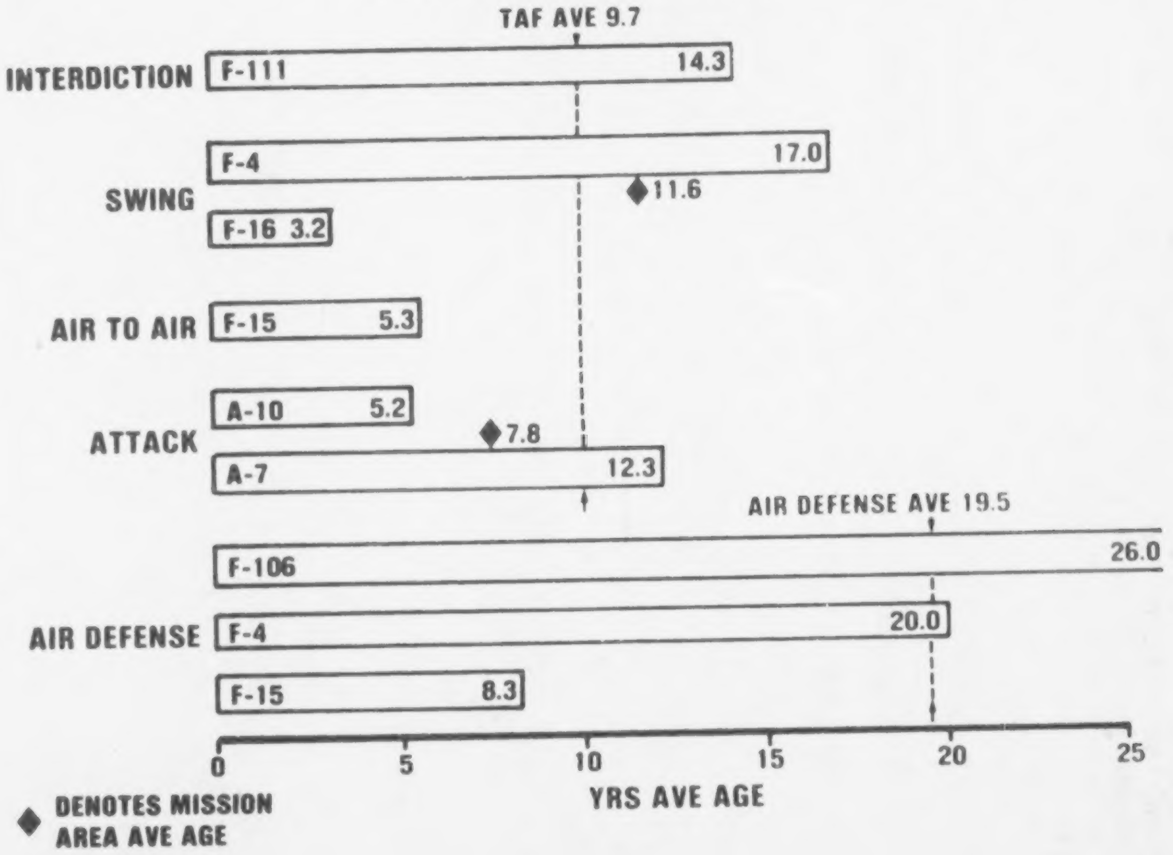
15 SQDNS



General **Randolph**. The next chart shows the air defense forces and the numbers here, most of those are in the Air National Guard, but they are very old, as you see on the third chart, and it is about a 20-year average age for the air defense forces, and we have to replace those, and that is one of the purposes of the competition.

[Slide follows:]

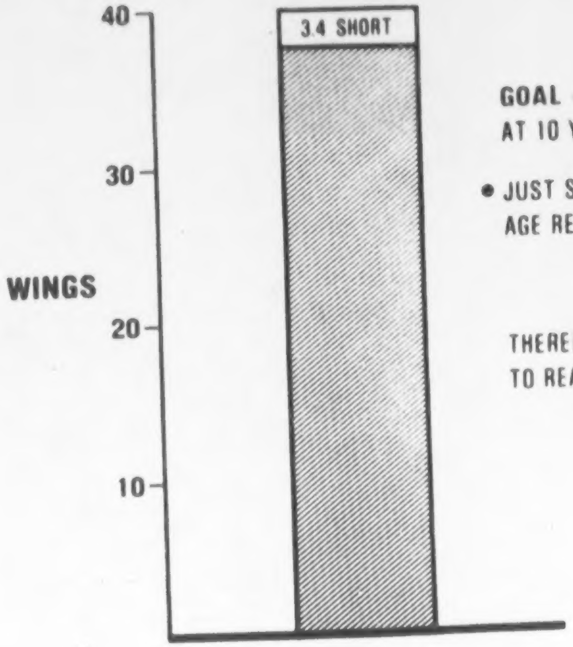
FY 86 FIGHTER AVE AGE



General **Randolph**. In the case of the fighters, they are about 10 years old, and that is a goal we would like to keep. As we continue to add to the fighters, we would like to keep the age at about 10 years, but operationally, that is supportable, and that is reasonably economical, and once they get a lot older than that in the fighter force, that becomes difficult in the maintenance area.

[Slide follows:]

SUSTAINING AND MODERNIZING THE TACTICAL FIGHTER FORCE



GOAL: BUILD TO 40 TFW BY 1991 AND SUSTAIN AT 10 YEARS AVERAGE AGE

- JUST SUSTAINING 40 TFWs AT 10 YRS AVERAGE AGE REQUIRES 260 AIRCRAFT/YR
  - BUT, 3 TFWs SHORT

THEREFORE: MUST BUY MORE THAN 260 AIRCRAFT/YR TO REACH GOAL

General RANDOLPH. Now, our objective is to get to the 40 tactical fighter wings and we are 3.4 wings short.

For each wing, each year, to keep the airplanes at about the 10-year average age, it takes 6.5 new airplanes per wing. If you do that arithmetic, just to keep status quo——

Mr. CHAPPELL. A wing is 72 airplanes, plus the training airplanes. But we have an airplane per wing, roughly, that we use to be able to keep up with the tests.

It is about 100.

Dr. COOPER. 100 to get 72 that are up and ready to go.

General RANDOLPH. To keep 72 on the ramp in the fighting force.

Mr. CHAPPELL. About a third of your force?

Dr. COOPER. Training, attrition.

General RANDOLPH. Most of them in the training aircraft.

Mr. CHAPPELL. Do you count the T–37? Is each airplane counted as one airplane?

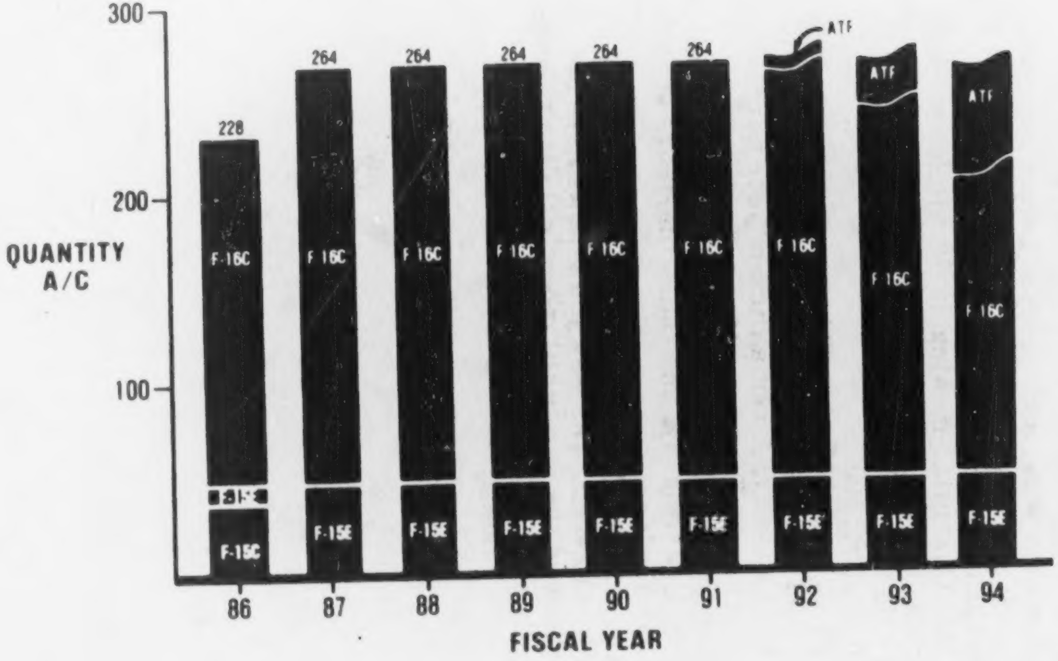
Dr. COOPER. Yes, sir.

Mr. CHAPPELL. The way you fellows have been talking about that airplane in the past, until recently, I didn't figure you counted that hardly at all.

[Slide follows:]

TACTICAL FIGHTER AIRCRAFT PROCUREMENT

FY 87 PB



General **Randolph**. At any rate, in order to expand the force then to the 40 wings, we would need to buy about 260 airplanes a year, and as you can see, our program on the next chart, does exactly that, it is 264 airplanes a year is what we are proposing, and 216 are F-16s and 48 are F-15Es, and the F-15E is a dual role fighter. It does the long-range interdiction, and is capable of flying an 850 mile radius of action and capable of air-to-air superiority role, so it would be used in both roles.

F-16 PROGRAM

The F-16C has a number of different models, and we continue to improve not only the radar, but the avionics. The avionics displays in the F-16 are very important to the weapons systems, because for the pilot to be able to manage all of the weapons he has on board, to be able to move forward to the fighting area in today's modern world, it takes digital displays, good head-up displays, and that is a large part of the avionics job.

Mr. **Chappell**. Is the size of the airplane different?

General **Randolph**. No, sir, the size of the airplane is exactly the same.

Mr. **Chappell**. Weren't you at one time looking for a little bit larger F-16?

General **Randolph**. There was a program called the F-16F, which was a modified version of the F-16C/D. It competed in the dual role fighter competition, and the F-15E won that competition, because it turned out to be a better machine for that job.

Dr. **Cooper**. If I might, when General Russ came forward and briefed you initially on the Tactical Fighter Roadmap we showed an F-16F in the roadmap, and that was the crank arrow wing F-16.

That has been cancelled because of budget pressure, pure and simple. We were interested in the program, but as the budget has come down, that has been one of the casualties.

Mr. **Chappell**. Did you ever build one?

Dr. **Cooper**. Yes, we built and tested two. The Japanese have expressed interest in an F-16F, among other things, but we have put them in mothballs.

Mr. **Miller**. Mr. Chairman, if I might, about that chart, very seldom do we see a chart that looks like this, because you are showing for some nine years a level trend as far as the F-15E is concerned. I know you have to make a long-term plan, and project into the future. But we have changes in technology, and aren't there fluctuations, where you may need additional F-15Es, and not as many F-16Cs?

You do have a straight line out through 1994.

Mr. **Chappell**. He is showing the new ATF in 1992.

General **Randolph**. Yes, sir, but the question, Mr. Chairman, is on these Es which stay straight.

Mr. **Miller**. Even stay straight in 1994?

General **Randolph**. Yes, sir, what our requirements intend is to make sure we have about 400 long-range interdiction aircraft.

This turns out, if you add up the arithmetic, 392 F-15Es we are buying. We would prefer quite frankly to buy these airplanes at a faster pace and in fact it is more economical to buy them at 60 a year rather than 48 airplanes a year, but the budget will not allow us to do that, so given the realities of the budget pressure and the requirements to buy about 400, this is generally what it takes to get to that.

Now, the question of technology, and do things change, and the answer is yes, sir, absolutely they change, and we have a continual program that we use in the Air Force to update our capabilities as the technology continues to improve, and that comes under the modification program.

Mr. **Miller**. Thank you.

MISSIONIZED F-16

Mr. **McDade**. You are making plans to buy an F-16CM, which is a new version of the F-16, and one that is less capable, is that right?

General **Randolph**. No, sir, let me discuss the F-16CM, because we inadvertantly, we the DOD, inadvertantly confused the Congress.

The F-16 comes in several different models, and in 1987 we will be buying the Model Block 30-G. That is a model that has a little bit improved equipment. What we have decided to do after we looked at the airplane was that we do not need the very capable radar that we are putting in the F-16Cs for its air-to-air work, we don't need that capable a radar for those F-16Cs that are designed to carry the LANTIRN.

That is the navigation and targeting pods. The new radar is not necessary, because that airplane will unlikely engage in air-to-air fights, and that is not its job, so the less capable radar which we now have on the F-16A is good enough for those air-to-ground airplanes, and we made the decision within the Department of Defense to put that less capable radar on, because it costs less, and it is not necessary, and so that came out, however, in something that is called, was called a CM, and it really is not.

It is the same airplane except that the radar is different. There are a number of differences in the F-16C from the A, major improvements in the avionics packages. All of those improvements remain in this airplane with that lesser capable radar, so that is what is meant by that.

Mr. **McDade**. Is the less capable radar the difference?

General **Randolph**. Yes, sir, that is the difference, and what that M was supposed to mean was missionize, and it said hey, we have looked at the mission and we don't need this radar and we wanted to let everybody know we had done that, but we caused a lot more confusion in doing that.

Dr. **Cooper**. There is one other difference that doesn't lead to a cost change, but in the LANTIRN birds, there is a different heads-up display than the remaining part of the fleet. The cost is about the same, but one has the LANTIRN HUD and the other has what we call a conventional HUD.

General **Randolph**. The cost is identical, but the angle of view for the LANTIRN is wider. I have flown the LANTIRN bird, and when you are chasing across the ground at 200 feet at 400 knots, you feel a bit more comfortable you can see out both directions, with a wider field of view.

PRECISION LOCATION STRIKE SYSTEM

Dr. **Cooper**. We were challenged by the Secretary of Defense and by Mr. Taft to try to find ways to reduce the cost of the F–16, and we have been able to do that. In our F–16 fleet in general we are proposing not to go forward with the PLSS data link.

PLSS has had some technical difficulty, and we think we can live without that. ASPJ is somewhat behind schedule, and we will not equip the current versions of the F–16 with the ASPJ advanced self-protection jammer, the next generation ECM capability will be built into it.

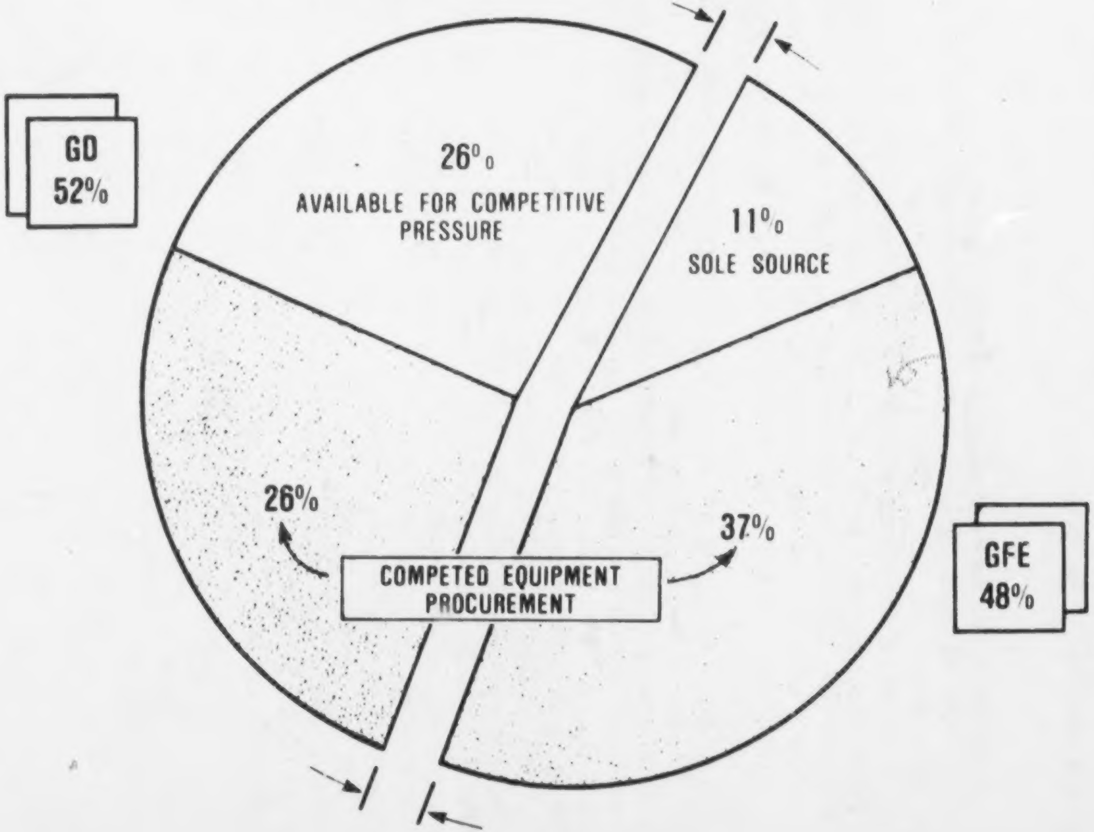
What we are trying to get adequate capability in that fleet of 216. We trade just a little capability in return for getting additional numbers. We think it is important to get our force structure up, to have rubber on the ramp.

We focused in on the LANTIRN birds that were going to have the more capable radar, and we felt that because the primary mission is air-to-ground, we could do without the APG–68 radar. Would we prefer to have the APG–68? Sure, we prefer to have an APG–68, but it is not necessary in that bird, so we think we have been able to effect some cost savings, and we have been able to get the numbers back up to 216, which was the original number that General Russ briefed you on two years ago.

That has become, in Mr. Weinberger's statement, what they have called a CM. Missionized, I guess, F–16C and the M is missionized, for the LANTIRN bird.

[Slide follows:]

DISTRIBUTION OF F-16 C/D COST



General RANDOLPH. That is not in any of our official documentation, so we won't use that term any more. By the way, Mr. Dicks asked about the specially configured F-16, this chart has nothing to do with that. The specially configured F-16, was for air defense, and it had a number of changes. What we are buying now, what we just explained, has been called the CM, and in fact, is not at all the same airplane.

Mr. DICKS. The new one is the SC?

General RANDOLPH. Yes, sir, avionics changes.

AIR DEFENSE COMPETITION

Mr. DICKS. Competition, we never heard about F-16SC until we had the threat of competition, and we never heard about price concessions until the Navy went out and bought some of those planes, so I think competition, I believe competition produces real savings or even the threat of competition.

General RANDOLPH. Absolutely, we fully agree with that. That chart shows the point Dr. Cooper mentioned, the amount of the F-16 that is competed today, and you can see that if all of this in the shaded area is competed——

Mr. DICKS. We have seen a reduction in the overall cost of the airplane?

General RANDOLPH. Yes, sir.

Mr. DICKS. How much?

General RANDOLPH. Well, in terms—I will give you an example. Right now we are trying, because of the Gramm-Rudman cuts to figure out how we can continue buying the airplanes that we needed to buy in fiscal year 1986.

What can we give up within the line to work that problem? We expect that simply having the air defense competition, just for this year, and even though that is not really part of that competition, will result in about a $40 million or more savings.

That is the minimum savings, simply the threat of competition, spilling over into the buying of the fighter force. That is just one example. I am sure there are other examples of the threat of competition, what that does to savings.

Mr. DICKS. The great engine war, sir?

Dr. COOPER. That is part of this program.

Mr. DICKS. I understand, but that did something in terms of getting the contractors to be more competitive, and I think when you have a sole source block like on the F-16, unless you have the threat of competition, another aircraft, you are not going to get the same level of savings, unless there is another airplane involved?

General RANDOLPH. May I address that? Again, we are at 63 percent of the airplane that is competed, but I am not satisfied with that, because there are other things, just as you said, that could yield to the threat of competition.

We have looked at that in the past, and done an economic analysis, and each time we have done that analysis, it turns out that it does not appear economical to us.

I sent the guys back just this past week——

Mr. DICKS. It is not economical to have a second source or competition?

General **Randolph**. Sir, let me explain what I mean by that. The reason for that is that almost everything that is done at Fort Worth is building F–16s.

If you reduce that number and give that to somebody else, that overhead at Fort Worth is not going to go away.

Mr. **Dicks**. What have we got on the learning curve? We ought to be coming down on the F–16, and it is not?

Dr. **Cooper**. Well, we are stabilized, though. Where you come down on a learning curve is in the early part. Every time you double the quantity that you produce, if you say you have an 80-percent learning curve, you reduce the cost by 20 percent.

We are now in that part of the F–16 where when you look at worldwide sales, we are out beyond a thousand aircraft that have been produced, so it does not look as dramatic over a few units, because the improvements are now gradual.

I am not trying to get on the wrong side of competition here at all, but the point is that there is a counterbalancing effect, if you are buying relatively limited quantities of things, and you split it into two parts, you lose the learning curve.

Mr. **Dicks**. Of course. If you are tying so much competition at the subcontractor level, that should be producing a lower cost per unit?

Dr. **Cooper**. We believe that it does produce a lower cost per unit.

F–16 COSTS PER UNIT

Mr. **Dicks**. I have asked three times. What is the cost per unit? Tell us what it is coming down from?

General **Randolph**. Current F–16 cost per unit is, and this is total procurement unit cost is $17.0 million.

Mr. **Chappell**. With all of the radars, everything on it?

General **Randolph**. That is right. Fully capable airplane.

Mr. **Chappell**. Fly-away cost?

General **Randolph**. No, no, the procurement unit cost in then year dollars.

Mr. **Dicks**. What did the Navy get them for on the Aggressor?

General **Randolph**. The Navy got them for the same price that we did. There were two differences in the Aggressor aircraft.

One difference was that there were a number of avionics pieces left out, and secondly, the company, in order to get the business, elected to sell it to the Navy with less profit.

Those were the two differences, otherwise the costs were the same.

Dr. **Cooper**. You would not want to go to war in the Aggressor airplane that the Navy bought.

Mr. **Dicks**. What was the cost per unit on the Aggressor?

General **Randolph**. I would have to get that for the record.

Mr. **Dicks**. $10 million?

Dr. **Cooper**. $10.1 million constant price. If we would buy the same airplane that the Navy bought and took the equipment out that was taken out of the Aggressor airplane, using our multiyear techniques and our breakout, we would have gotten it for the same or possibly even a little bit less.

We provided those responses for the record.

Mr. **Chappell**. May I ask one question?

You are saying procurement costs. What is the difference between procurement and fly-away costs?

General **Randolph**. Procurement includes all of the spares, support equipment.

Mr. **Dicks**. Non-recurring?

General **Randolph**. Yes, sir, procurement does include non-recurring but the R&D is not in that.

Mr. **Chappell**. Life cycle. What is the life cycle costs of this same aircraft? 20-year life cycle?

General **Randolph**. We would have to provide that for the record.

Mr. **Chappell**. Would you do that?

[The information follows:]

The F-16 average unit Recurring Flyaway cost is $12.881M (TY$) and includes the following cost categories: airframe, propulsion, avionics/armament and engineering change order. The average unit Procurement cost of $17.358M (TY$) is determined by adding the following cost categories to the Recurring Flyaway cost: tooling, special test equipment, engineering, training equipment, peculiar ground support equipment, data and initial spares. These unit costs are computed over the planned USAF buy of 3047 aircraft and reflect the FY 1987 PB baseline.

Mr. **Chappell**. Here, when we say procurement, we are talking about the price of that airplane, including spares, for the years in which it was purchased?

General **Randolph**. Yes, sir.

Mr. **Chappell**. And that difference then, fly-away costs is the stripped down cost? The base cost?

Dr. **Cooper**. Lowest cost, that is what it costs to buy one more, forget all the spares.

Mr. **Chappell**. With or without the spares? I want to be sure I understand the fly-away costs.

General **Randolph**. I will take everything now in then year dollars, and give you the F-16C, the recurring fly-away unit costs for F-16C is $12.8 million for the fiscal year 1987 buy.

That cost is the airplane delivered on the ramp, but it does not have the spares. It does not have the peculiar support equipment. Those things need to be added to the airplane.

Mr. **Chappell**. Radar?

General **Randolph**. Oh, no, it can go to war immediately, but doesn't have the logistics tail, is not included in that number.

Mr. **Chappell**. That is how much?

General **Randolph**. $12.8 million. If you include the logistics tail in then year dollars, it is $17.0 million per copy. That is the unit procurement costs.

Mr. **Dicks**. I have a chart that talks about F-16C aircraft cost analysis, and says the quantity in fiscal year 1987 is 180, and it goes down here to fiscal year 1988.

General **Randolph**. 216 it should be, sir.

Mr. **Dicks**. But the cost in fiscal year 1987 is $15.4 million, and then in 1988, at the quantity of 216, it jumps to $17 million, per aircraft. That is roughly $1.6 million more.

What is that?

General **Randolph**. I have no idea what you are looking at, sir.

Mr. **Dicks**. It is 1987 and 1988.

General Randolph. I will have to take that for the record. I don't understand what that information means.

Mr. Chappell. What document?

General Randolph. The document is a document called a P-5 document, which is an aircraft analysis document.

Mr. Chappell. By the Air Force?

General Randolph. It is a document produced by the Air Force, but we are buying 216 in 1987, not 180.

Mr. Chappell. If you bought 180, would that jump the price up?

General Randolph. It works in the wrong way on this one. The more you buy it—this is just the inverse.

Mr. Dicks. It is pretty hard for us to have a hearing if we can't get accurate information.

Mr. Chappell. The information you have given us you certify is correct?

General Randolph. The information I have is correct. That information was supplied by the Air Force, and I will have to go back and examine it.

Mr. Dicks. I would certainly appreciate it if I could have a copy myself.

Mr. Chappell. Just for the record, get it straight now, for the procurement price, it is how much?

General Randolph. Procurement price, Mr. Chairman, is $17.0 million a copy. The fly-away price is $12.8 million a copy. Those are the numbers, those are certified correct numbers.

[The information follows:]

First, the document referenced in the conversation among Mssrs. Dicks and Chappell and General Randolph was the F-16 P-5 exhibit (Atch. 1) dated and submitted in February 1986. There was a misunderstanding as to the quantities and procurement unit costs of F-16s procured from FY 1985 through FY 1988. The attached P-5 has columnar lines separating each procurement year, added for clarity. The P-5 says:

	Fiscal year—			
	1985	1986	1987	1988
Quantity	150	180	216	216
Unit gross weapon system [GWS] cost [1]	$16.127	$16.168	$15.402	$17.071

[1] Then year dollars in millions.

Two additional costs were discussed. For the FY 1987 buy expressed in then year dollars, the unit procurement cost for the F-16 is $17.016 million, and the unit recurring flyaway cost is $12.832 million.

Second, with regard to the GWS unit costs expressed in item 18 of the attached P-5 exhibit, there are variances from FY 1985 through FY 1988. The following table summarizes these variances:

UNIT GWS COST VARIATION

[TY in millions of dollars]

	Cost	Delta increase (decrease)	Predominant causes
Fiscal year:			
1985	16.127		
1986	16.168	.041	Inflation and logistics support.

UNIT GWS COST VARIATION—Continued

[TY in millions of dollars]

	Cost	Delta increase (decrease)	Predominant causes
1987	15.402	(.766)	Increased business base, decreased logistics support and 22 ASPJ.[2]
1988	17.071	1.669	Inflation, logistics support, and 195 ASPJ.[2]

[2] Airborne Self-Protection Jammer Group B sets at almost $1.4 million per set.

[CLERK'S NOTE.—The P–5 document provided by the Air Force is on file with the Committee's records.]

Mr. CHAPPELL. Okay, how about current dollars?

General RANDOLPH. The current year dollars for the F–16 is $17.0 million a copy.

Mr. CHAPPELL. You mean it has jumped that much from 1985?

General RANDOLPH. Yes, sir.

Mr. CHAPPELL. What is the inflation rate applied?

General RANDOLPH. Keep in mind, that is the unit procurement cost for the fiscal year 1987 buy of the multiyear.

BUDGET AUTHORITY FREEZE

Mr. DICKS. Will the chairman yield?

I appreciated Secretary Cooper's statement that you are trying to look at the real world in terms of what is going to happen in the budget. But obviously, how are we going to try and enter into contracts on any of these systems when the President has got a budget at $320 billion, and the people on the Budget Committee are now talking about a BA freeze, and if it is a BA freeze, you would be at $286 billion in new BA authority.

I am troubled by how the Air Force is going to proceed this year when there is this major disparity between the budget as submitted and what realistically is going to come out of the other end of the tunnel.

Dr. COOPER. We are troubled by that, too, Mr. Dicks.

GRAMM-RUDMAN-HOLLINGS SEQUESTRATION

Mr. DICKS. Secondly, what are we going to do about a situation where on existing contracts, if Gramm-Rudman goes into effect, you are going to have to take cuts in existing programs?

There is no exception this year as there was in the 1986 sequestration, where the President could except certain contracts.

Dr. COOPER. Let me comment, and then I will ask General Randolph.

The whole basis for multiyear contracting is that you have a stable program, and it is an agreement that the Department enters into with the Congress, we assure you, we will not change our requirements, and you assure us to the extent that you can that you agree with that, and we will be provided a stable level of funding for whatever the duration of that contract is.

There are escape clauses in there, on contingent liabilities, where if either one of us breaks our bargain with the contractor, we have termination liabilities we have to pay.

While General Randolph showed you 216 F–16s, our core multiyear contract was for 180 a year with options to add on top of that, up to 36 a year.

Mr. DICKS. You could come down to 180?

Dr. COOPER. Yes, maybe even to 175. If this budget gets cut to the extent where we don't procure at least 180 or down to 140 or 150, we will end up paying termination liabilities and not just on this contract, all our contracts, that are legally binding if the budget gets cut to the levels that you suggest that will have very dire consequences on our program, no question about it.

We have submitted to you a budget for your consideration. They asked us, suppose you take 20 percent out of it, how do you re-rack that? I can't sit here and tell you how to re-rack a cut of that magnitude.

We spent a year putting this budget together, our five Air Force priorities. If we took a large cut, we could have to go back and reshuffle the deck and deal again, but you can't make cuts of that level by just cutting one or two programs.

It would have to come across the entire Department of Defense budget, and I submit to you that would be a very delicate task to go in and re-rack that.

Having sat on the other side of the dais for seven years, you can take a couple billion dollars out of the budget by, if I might, nickels and dimes, but the types of cuts you are talking about in Gramm-Rudman, if sequestration goes into effect, I don't know how to begin to deal with that at a witness table.

We would have to take that top line number back and reshuffle the deck.

Mr. DICKS. It is important at some point and maybe this is too early in the process, to understand how this would affect existing contracts, so that the Congress understands the implications of this.

A lot of people out there were thinking, this is a freebie.

Dr. COOPER. You worry about it for the entire right of the Federal Government, and we worry about it even more for the Department of the Air Force, because that is our job. I don't know what levels you are talking about, but the levels I hear, I don't know how you take that sort of cut without going in and tearing the Air Force budget apart, not only in programs but people as well, Mr. Dicks.

And if the Congress insists that force structure be preserved in terms——

Mr. DICKS. Then it means R&D and procurement?

Dr. COOPER. If you can't close bases, draw down your force structure, then you have a progressively smaller and smaller piece of the pie that that burden falls on, and it would be extreme.

Mr. CHAPPELL. If you sat on this side of the table, would you have voted for Gramm-Rudman-Hollings?

Dr. COOPER. Mr. Chairman, I would vote for Gramm-Rudman if our budget is enacted in its entirety.

Mr. CHAPPELL. That is a lot of fuss.

Dr. COOPER. I think the President supports Gramm-Rudman. I don't know about Gramm-Rudman, per se. I will tell you, I agree with trying to get a handle on this Federal deficit, because I don't think that we can continue to have a strong defense posture if we continue to run Federal deficits at the level we have been running them, so whether or not Gramm-Rudman is the right vehicle remains to be seen, but we all have to turn our attention to that.

Mr. CHAPPELL. I thank you for the yes and no answer.

F-16SC PROGRAM

Dr. COOPER. Nobody asked me, Mr. Chairman.

If I could take another minute, and engage Mr. Dicks a little bit more, the SC you mentioned, the F-16SC was not bid as an air defender, it was an unsolicited proposal General Dynamics offered us because of the fear we were going to buy F-20s outright, and they took a lot of capability out of the airplane that we cannot accept, and that is the bottom line we all have to remember.

Competition is not an end in itself. It is a vehicle that we use, a club in our bag much like multiyear and breakout, and we use all when we can to our advantage, but if it doesn't get you the product you want, it makes no sense.

The great engine war, that was a tremendous competition, but we didn't do it just for price. In fact, the savings there were not near-term savings on the great engine war, but they came in life cycle costs, but we did it to get a better quality product, because the engine was breaking down more often than we liked.

We got a better quality product, and also a better price so we have got to remember capability as well, and that is our responsibility

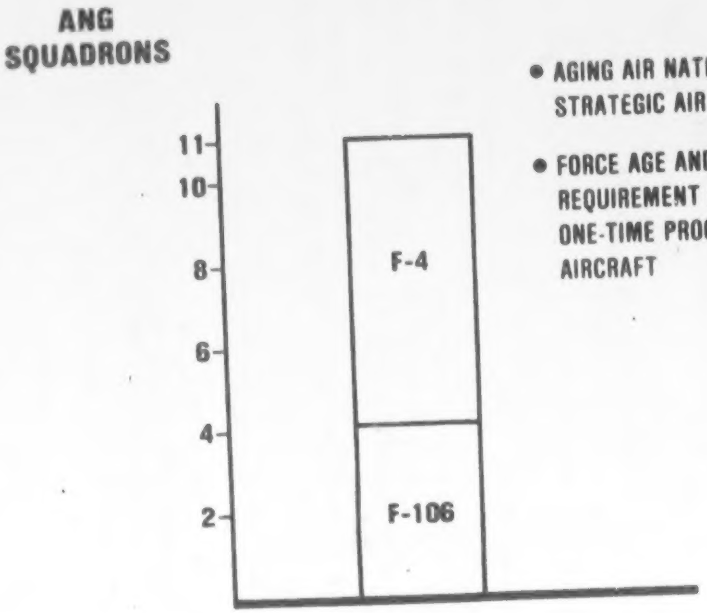
AIR DEFENSE COMPETITION PLAN

Mr. CHAPPELL. General.

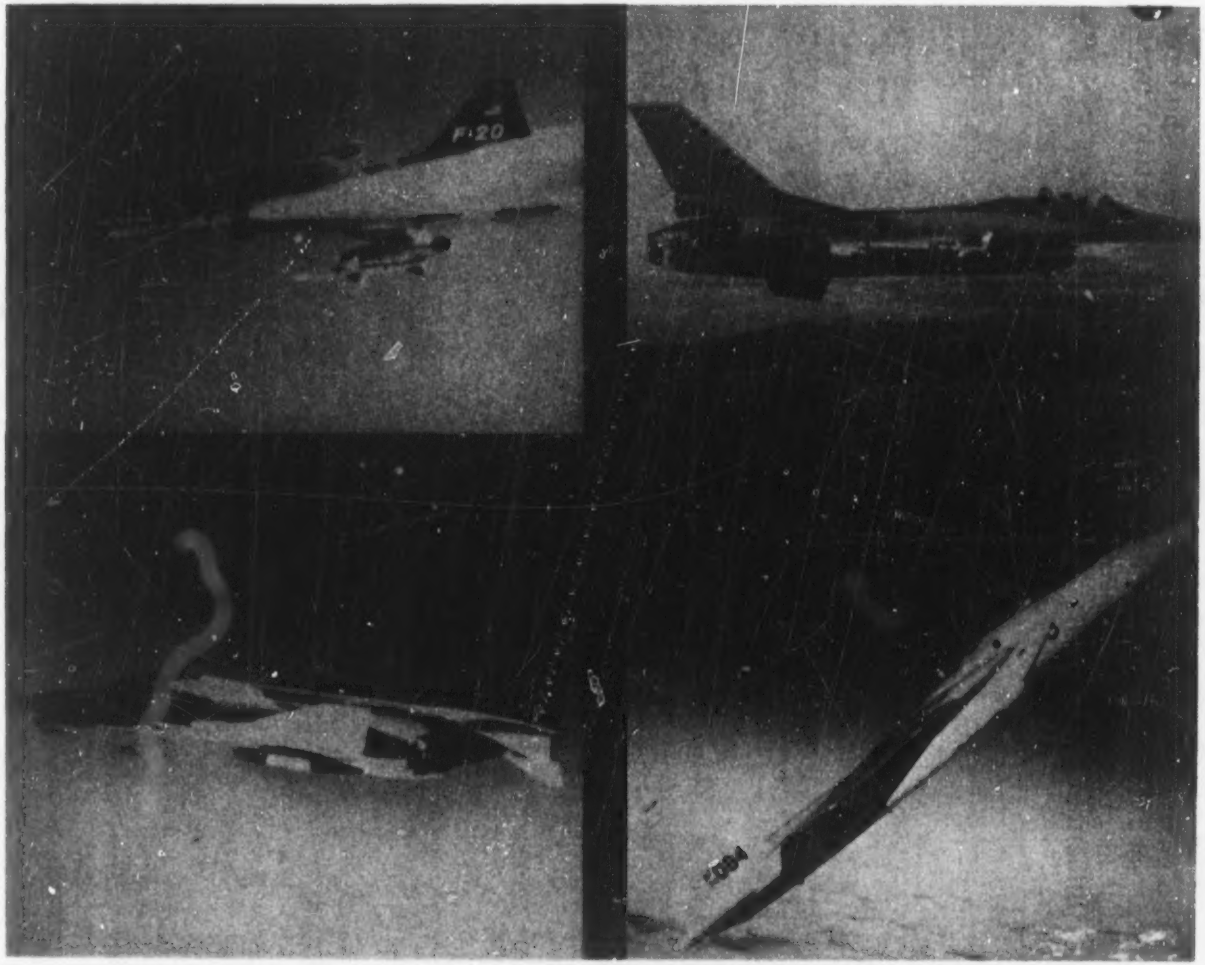
General RANDOLPH. That is the air defense piece, and what we need to do is replace 11 squadrons. We have got the competition set up to do precisely that.

[Slides follow:]

STRATEGIC AIR DEFENSE MODERNIZATION
AIR NATIONAL GUARD



- AGING AIR NATIONAL GUARD F-4s AND F-106s IN THE STRATEGIC AIR DEFENSE FORCE MUST BE REPLACED
- FORCE AGE AND RELATIVELY SMALL INVENTORY REQUIREMENT (APPROXIMATELY 300) DICTATE A ONE-TIME PROCUREMENT OF MISSIONIZED FIGHTER AIRCRAFT


F-20

General **Randolph**. As you can see here, these are the candidates for the competition. F-20, F-16, the F-14—folks have suggested to us the F-14 and the F-15, and these are contractors who have expressed interest in bidding this air defense competition with these airplanes on the schedule you see right here.

[Slide follows:]

AIR DEFENSE COMPETITION PLAN

- ONE TIME - WINNER TAKE ALL COMPETITION FOR 300 AIRCRAFT
  - FULL AND OPEN COMPETITION
  - MUST BE AN "EXISTING" AIRCRAFT -- NO GOVERNMENT FUNDING FOR DEVELOPMENT
  - PROCUREMENT PROFILE

FY	86	87	88	89	90	91	92
QTY	10	20	60	60	60	60	30

- AGGRESSIVE COMPETITION SCHEDULE

• DRAFT RFP RELEASE	11 FEB 86
• FINAL RFP RELEASE	24 MAR 86
• PROPOSALS RECEIVED	9 MAY 86

General **Randolph**. The F-15, they have expressed interest in bidding an F-15.

The RFP draft was released in February. All of the contractors have commented on that, and we plan to release the final on the 24th of March, and the date that we require in that request for proposal is 9 May for them to respond.

We will then move forward to the source selection as far as we can.

Mr. **Dicks**. Are you going to meet the July 1 date?

General **Randolph**.The answer, sir, the direct answer is, I don't know. This is the kind——

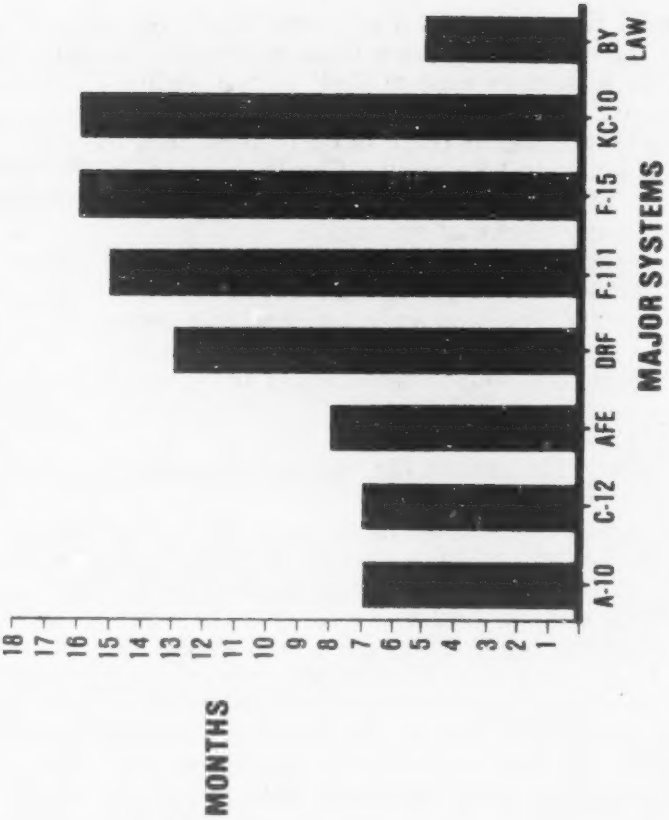
Mr. **Dicks**. That is not very direct. That is about as indirect as you can get.

General **Randolph**. Let me show you the problem.

Dr. **Cooper**. We will try to answer your question.

[Slide follows:]

TIME COMPARISON CHART
FROM DATE RFP RELEASED



SOURCE SELECTION DEADLINE

General **Randolph**. The problem we have, when the RFP is released, these are programs that are in the history books of how long it took from release of RFP to completing the source selection process and the fastest we have ever done it is seven months.

The law requires it to be done in less than five, so the answer is that it is going to be a very difficult thing to do. We will give it our best shot. My personal opinion is that we are not going to make it, but that is my personal opinion.

The Department's position is we will try as hard as we can and do the best we can to get there from here.

Dr. **Cooper**. One was July 1st, and the second date was no later than 60 days later to be on contract. If you want us to do a professional job in the source selection, I don't see how we can make a source selection by July 1st.

We don't get the bids in Until May 9.

Mr. **Dicks**. The reason for that is because you have stalled in getting the RFP out.

Dr. **Cooper**. No, sir, we have not stalled. The reason it has taken this long, I want to take you back to the great engine war for a minute, this is a good analogy. We had two different engines bidding there, and we had to come up with a set of specs so both engines could bid against and this one, as General Randolph said, at least four aircraft will be bidding, two currently in production, F-15 and the F-16, one out of production, the F-4, and one that hopes to enter production, the F-20, and you have got apples and oranges all mixed together, going at our air defense mission.

That is a very complex source selection, and while Congress was interested in having us move out as smartly as possible, you are also interested in having it done very professionally, because we know everyone is going to be looking over our shoulders when we announce the winner, and personally, I want to make sure that our selection stands up under close scrutiny, so we felt it was important to take the time, to lay down requirements and went out with a draft RFP on February 11.

Mr. **Chappell**. What are they bidding to?

Dr. **Cooper**. Not strictly performance, but against the air defense mission, and what we see the requirements there to be, but these are different aircraft, different range capabilities, different radar capabilities.

We think they all meet the minimum requirements that were set forth. That is why we went out with the draft RFP, to get the contractor input as well.

That is exactly the point, we are not starting from scratch building brand new aircraft that can be tailored to a specific set of specifications. We don't have a test program associated with this.

I think you were interested in ensuring that we moved out on the competition, and the game is on now, but you are also interested in making sure we do it professionally, and the results will stand on their own merits.

My own opinion is that there ain't no way to get there from here, if you don't get the bids until May 9, to make a source selection by July 1st, and we will try as hard as we can, but I think it is doubtful we will make September 1st, but——

Mr. **Chappell**. You are not talking about bidding the design anyway, only the performance?

Dr. **Cooper**. Sure, but there is price, technical, reliability, maintainability, all the things we do in a professional source selection.

If you just look at the history of source selections, this is not a long source selection, it would be as fast as we have done one.

Mr. **Chappell**. Maybe you want to set a record on that?

Dr. **Cooper**. I think we will, even if we don't meet the September 1st date. I would hope that the Congress would allow us to go forward, because if we don't make the decision by September 1st, we will be very close at that point in time.

Until we get the bids, open them, and do the analysis, not one of us can tell you when this thing will be done.

This does not allow much for a decision time and it has been my experience in the building, that it does take time for source selection authority when he gets the information, to review it, to analyze it and to mull it over in his mind before he makes a decision.

It is not normal that you go in at 10 in the morning and have a decision at 2 in the afternoon. The source selection authority will keep most of these things six, five weeks, and that is prudent because he needs to bring in the various views that are in the building.

That's my view.

Mr. **Dicks**. One question.

What happens to the money? We provided $200 million. What happens to the money if Congress does not pass any legislation to extend the date?

Dr. **Cooper**. We asked that ourselves. The money is three-year money. It doesn't need to be on contract by September 1st. There is a legal question as to whether or not the law impounds the money after September 1st, and what your intent was.

If we came forward with a decision on September 2, there is a legal question about the budget impoundment—I beg your pardon, the Anti-Deficiency Act, whether or not there is a string on that money because of the September 1st date in the law.

If we were not able to make it by September 1 and do it shortly thereafter, we would hope there would be relief, if necessary, so we can go forward.

General **Randolph**. One point, I guess you have a question on engineering changes, and I at some point before we quit, I would like to address the question of engineering changes.

ENGINEERING CHANGE ORDERS

Dr. **Cooper**. Policy issue of engineering change orders.

General **Randolph**. The question was, how does the Air Force control engineering changes? Let me start off, Mr. Chairman, engineering changes in any development program are required.

There is no way to do a development program—and I have been in this business for 20 years, and I have never seen any program that was done without engineering changes.

Engineering changes, when they are properly controlled, are positive, and the way the Air Force controls engineering changes through the baseline process and in that base line process, we have a line called the engineering changes order line, ECO line, that we watch to make sure that the line is proper, and that it is not excessive.

And then the program manager is allowed to work within the bounds of that line to make whatever changes that he sees fit.

If he has to exceed the bounds that have been set for him, then he has to go forward all the way up to the Assistant Secretary to get final approval for the change.

There are 21 programs right now that are controlled at the air staff level; that is, the senior levels, Air Force level, that are baselined and there are another 50 or so programs that we could give you all for the record that are controlled at the Headquarters Air Force Systems Command level, so that is how we control the engineering change process.

Mr. **Chappell**. You are familiar with what the Navy does?

It takes the signature of the Commandant of the Marine Corps, the Chief of Naval Operations, and the Secretary of the Navy, and the Secretary says that eliminates about 95 percent of the engineering change orders.

Do you feel that would be a good policy for you to follow or not?

General **Randolph**. No, sir, let me just say that the Navy—first of all, the Navy has clearly been very aggressive in working the cost controls, and we are looking at all of the things that they are doing.

For example, the Navy has elected to ask the contractors to buy their own tooling, that is, capitalize tooling, and we are looking at that process.

That might indeed be a good process for the Air Force to follow. With regard to engineering changes, though, we believe that the best course of action for the Air Force to follow is to control the amounts of money, because we know changes have to take place, and I will give you an example.

In the case of the HARM program, a program run by the Navy, the Navy has made a significant number of engineering changes, and those were required because the missile had minor wing flutter problems, had less than desired performance against low targets problems with supersonic launch from the F/A-18. Software changes were required, to eliminate these problems and improve accuracy. All of those changes were done under the engineering change order process. The missile is now working extremely well as a result of those changes 12 shots, 12 hits, so the point is you have to do change orders.

Mr. **Chappell**. Nobody disagrees with that. Our interest is to make sure we do it better the first time so we don't have to have as many, and particularly small change orders that cost a lot of money.

Nobody is saying you should not change, obviously you should.

General **Randolph**. The control process we use is a dollar control process in the Air Force. We have identified the dollars.

POWERED SAILPLANES

Mr. **CHAPPELL**. Let me move on to a prime issue this year, and get away from some of the trivial things for a moment, and go to a strategic program. I want to tackle this, Dr. Cooper; tell us why you need $200,000 this year to buy powered sailplanes for the Air Force Cadets?

General **RANDOLPH**. Sir, I will have to admit that I had never heard of a powered sailplane until I visited the Air Force Academy, and I saw it. We bought 10 of those, and two have been lost, so the $200,000 is to buy two more powered sailplanes.

Mr. **CHAPPELL**. Are these going to be stealthy aircraft?

General **RANDOLPH**. When the sailplane turns and flies directly toward you, it is very stealthy, and it is not only stealthy in view, but also in sound.

Mr. **CHAPPELL**. FLIR or LANTIRN pods?

General **RANDOLPH**. The Mark-5 Eyeball was the best source of action for following this.

Mr. **CHAPPELL**. No room for coffee pots?

Dr. **COOPER**. No coffee pots on this one.

General **RANDOLPH**. We do have a specialized coffee pot, but it is made out of styrofoam.

Mr. **CHAPPELL**. Are others going to compete in this proposition?

General **RANDOLPH**. I am not at all sure the sailplane——

Mr. **DICKS** Mr. Chairman?

Mr. **CHAPPELL**. Is this an official plane, General?

Mr. **DICKS**. As a member of the Board of Visitors and someone who went out on their glider program, it is a great program and gives tremendous experience for the cadets to learn how to fly, and one of the best programs, and one that does more for morale at the Academy than any other one I have seen, and it is an experience to be out there 12,000 feet.

Mr. **CHAPPELL**. Let the record show, nobody was really complaining. We just wanted to have a little fun.

I want to discuss the trainer.

T-46 PROGRAM

Dr. Cooper, the Secretary of the Air Force's report states that the current Air Force primary trainer, the T-37, has "recognized operational deficiencies and safety concerns." It also states that you propose to cancel the T-46, which is to replace the obsolete T-37, "due to fiscal constraints."

Dr. Cooper, why is the Air Force apparently willing to continue using a trainer, the T-37, which has operational deficiencies and safety concerns?

Dr. **COOPER**. We are going to use the T-37 for some period of time regardless of whether or not we buy the T-46. We will continue to train safely. Aside from the T-46, if we went forward with the T-46, we are going to continue to use the T-37 for some period of time, because there is a lag between the time you budget funds for the T-46 and bring it into your operational inventory.

I believe the statements that have been made by the Air Force in its past relative to the T-37 still stand today.

I need to point out to the committee that we did not recommend cancelling the T-46, because of our view of the T-37 had suddenly changed.

We recommended it not be funded in 1987 and beyond, because of budgetary pressures, and also when we looked at the program, midyear, last year, it was experiencing some technical difficulties.

I think you are aware of the contractor operations review that we conducted at the facility.

Mr. **CHAPPELL.** I understand those have been corrected? I understand they have changed management. Fairchild has acted positively to bring back the program. They have cleaned up the shop and modernized the plant to do these things.

I looked at the plant not too long ago myself, and the impression I received from your Air Force officer who was on the spot was to the effect that, while everything has not been completely straightened out, they were certain that most of those things had been repaired.

Dr. **COOPER.** They have improved over where they were in the July-August time frame last year. There was an awful lot of room for improvement.

The trends have gone up.

Mr. **CHAPPELL.** I initially opposed that program.

Dr. **COOPER.** I remember your question on the T-34C.

Mr. **CHAPPELL.** You guys made a great case for the tremendous deficiencies of the T-37, it couldn't climb out fast enough, therefore, cutting down on training time, and you had to get out where you could get to the instrument areas, work through the patterns, and you had to get out and get back, and the T-37 just wouldn't do it.

It was horrible. There was a tremendous necessity for a change. You just had to have this trainer. Were you telling us accurately then or now?

Dr. **COOPER.** I was not here. The Air Force will stand by those statements, Mr. Chairman, about the T-37. The T-37 is not the optimum trainer in the future for the Air Force. We would prefer to have a new trainer.

Mr. **DICKS.** This has very serious safety problems?

Dr. **COOPER.** No, sir, Mr. Dicks, we will have to spend money on the T-37, though.

T-37 EJECTIONS

Mr. **CHAPPELL.** General Randolph, we have some correspondence you sent to the Chief of Staff of the Air Force, who was "shocked" to learn that only 86 percent of the 100 ejections from T-37 aircraft have been successful; unsuccessful means fatalities.

General **RANDOLPH.** I don't remember those numbers, but you are right, the ejection seats in the T-37 do have problems, and by the way, Dr. Cooper would agree with me, we are not saying there are not safety problems, but we believe that it is not an unsafe airplane to fly.

That is two different things.

Mr. **CHAPPELL.** The T-37 crew is out of the ejection envelope 20 to 70 percent of the time, depending on the mission.

Is that true or not?

Dr. **Cooper**. I don't know, Mr. Chairman.

General **Randolph**. I will have to check those numbers. It flies out of the envelope but I don't recall the specific numbers, but I can recheck that for the record and provide it, Mr. Chairman.

[The information follows:]

Your information is correct. Since its introduction, the T-37 has had 110 ejections; 95 of those were successful. This number equates to the 86 percent rate you referred to.

In regard to your question on the amount of time the T-37 is out of the ejection envelope, 20 to 70 percent is also correct. This percentage is dependent on the mission being flown (pattern only where the percentage is high vs high altitude aerobatics where it is lower) and the climate conditions experienced at that time (hot days degrade aircraft performance which directly affects the ejection envelope).

Dr. **Cooper**. Mr. Chairman, if the issue is, would the Air Force rather have a T-46, if it was bought and paid for, in our inventory as opposed to a T-37? There is no question if that aircraft performs as advertised we would rather have a T-46.

T-46 TEST PROGRAM

Mr. **Chappell**. Let me ask you about the test program. How is it going forward? How many airplanes have been delivered?

Dr. **Cooper**. One.

Mr. **Chappell**. How many hours have you flown the aircraft?

Dr. **Cooper**. I will supply that for the record.

[The information follows:]

As of March 12, 1986, the T-46 has completed 66 flight-test sorties and amassed over 98 hours of productive flight test.

Dr. **Cooper**. We think we are probably about a year behind on the test program. We believe the T-46 design is fundamentally sound. Like all test programs, there have been some minor problems.

We see no show stoppers, and we think the T-46 will perform as advertised. It is behind schedule, over cost, in terms of full-scale development program, and there is a limit to government liability on that chart, it has a ceiling on it, so to the extent it goes beyond that ceiling, Fairchild has to pay that bill, and it is substantial.

I believe we estimated——

General **Randolph**. Almost $200 million.

Dr. **Cooper**. About $65 million is out of their pocket. Our concern, though, is last year, when our budget was cut, and it goes back to the point Mr. Dicks made, where we see the budget going, we are going to have to live with some less than optimum solutions in the Air Force on some programs.

What we said about the T-46 in the past is still true. We would rather have it. It is just a budget problem.

Mr. **Chappell**. General, have you flown this aircraft?

General **Randolph**. No, sir, I have not flown the airplane. I was out at Andrews, sat in the cockpit. General Skantze, the Commander of Air Force Systems Command, flew the airplane and his report back to me was that it flies quite well.

He was quite satisfied with it. By the way, you asked how is the test program going. It is, of course, behind, but the test program itself is going quite well, quite smoothly.

Mr. CHAPPELL. That is what I understand, going very well, with no major bugs.

General RANDOLPH. There is one problem, and that is the drag count is much higher than it is supposed to be, and Fairchild is working that quite vigorously right now, but that is the only serious problem that I know about in the test program.

Mr. CHAPPELL. How much money have we spent on this program so far?

General RANDOLPH. As of the end of this year, with the monies that we have in the R&D program, but assuming that we do not press forward with block two, which is still an open issue, $470 million.

Mr. CHAPPELL. That you spent so far?

General RANDOLPH. Yes, sir.

Mr. CHAPPELL. What is the total program intended to be?

General RANDOLPH. It is about $5 billion when you buy all the airplanes, and the support equipment, et cetera.

T-37 PERFORMANCE DEFICIENCIES

Mr. CHAPPELL. I have a paper that comments on the T-46, dated June 26 of 1979, six years ago. I read you a pertinent part under paragraph five, page 6 of that report on constraints.

A, affordability and relative priority. The sophistication and capabilities of Air Force weapons systems beyond fiscal year 1987 dictate the need for a fully supportive undergraduate pilot training program. The modification and replacement of the T-37, a key element of that program, must be considered a priority, no less than equal to producing the prime weapons systems. Modernization to the primary undergraduate system can be accomplished within 1 percent of current level—budget funding on an annual basis over the life of the program.

It points out how critical this thing was in the beginning, and now we are talking about abandoning it. If you start all over again, you talk about slippages, that sort of thing, it does not make sense to me. I can't see it.

During the summer, which is the peak flying season, that the T-37 most routinely flies on one engine, because it loses an engine.

General RANDOLPH. I cannot confirm that.

Mr. CHAPPELL. Tell us whether that is true or not.

General RANDOLPH. We will check that, and it is not a bad airplane. The performance—there are performance deficiencies, and there are things that we would like to improve, and the T-46 does that, but the decision was made as has already been stated.

[The information follows:]

As General Randolph stated, deploying the T-46 would resolve T-37 performance deficiencies. However, primarily because of budgetary constraints, we deleted T-46 funding from the FY 87 budget. Alternatives to address current trainer aircraft deficiencies are under review. One option is the modification of the T-37 aircraft to extend its service life, increase its performance and solve related safety concerns under a wider range of temperatures and flight regimes. In the interim, we will continue to stress the safety programs which have resulted in the excellent Air Training Command accident rate of 0.4 mishaps per 100,000 flying hours for the last five years. As a comparison, the Air Force overall average for 1985 was 1.5 mishaps per 100,000 hours which was the safest year in Air Force history.

AIR FORCE FIVE-YEAR PLAN

Mr. **Chappell**. The current Air Force five-year plan is to buy 1590 new fighter aircraft, and these are high-performance sophisticated aircraft, and increase of 258 aircraft from last year's plan.

How can the Air Force afford to buy more fighters which cost at least three times as much as trainers, but no trainer aircraft for the pilots flying these sophisticated aircraft, and need to have the best training they can to give them the best capability?

I can't follow the logic.

Dr. **Cooper**. Your numbers are relative to the numbers a year ago on the tactical fighter roadmap. I would like to take you back to two years ago. As I mentioned earlier, it is a very high priority in the Department of Defense, and you may disagree with those, but it is a very high priority to both modernize and build to 40 tactical fighter wings in the tactical fighter force.

That is why those numbers increased. Again——

Mr. **Chappell**. I am not fussing about it. I am making some comparisons. How many dollars are we talking about if we go forward with this year's program, rather than cutting it off.

How many dollars would be necessary to sustain this program as you had planned during this fiscal year?

Dr. **Cooper**. If you wanted to resurrect the program, how much money?

Mr. **Chappell**. Yes, sir.

Dr. **Cooper**. I don't have a number off the top of my head. Last year at this time, we told you that in the 1987 budget, we were going to be asking for $563 million.

Mr. **Chappell**. Obviously with the slippages, so forth, it can't be anything like that to get us through this year?

Dr. **Cooper**. You could probably use fewer dollars this year.

NEED FOR A TRAINER

Mr. **Chappell**. If you got any corrections, you gave us a lot of information on the cost of operating the T-37, the cost of maintaining that T-37 as compared to what you intended to have, and tell us where those figures were in error then, if they were, and what they realistically should have been, and compare it with this aircraft, the T-46, compare it for us, and let's see, the facts have not been matching.

Maybe the Air Force doesn't need a trainer period?

Dr. **Cooper**. I don't think we have changed our facts on the T-37, Mr. Chairman. This decision was made independent of the T-37. We can continue with the T-37 with relatively modest investments.

In fact, we were going to continue because the T-46 wasn't going to hit the ramp for some period of years, for probably at least five or six more years.

Beyond that, we will start to have to make relatively major investments in the T-37 to extend its operational life. That can be done.

Will it be done as good as a T-46? No, it will not be as good as a T-46, and at some point regardless of what you do the T-37, you will run out of useful life, maybe 10 years from now, but I would like to make sure with you the environment we were in when we made the decision on the T-46.

Verne Orr, Secretary of the Air Force, and I am not speaking for Russ Rourke right now, he has called for a major review very shortly, and he wants to take an independent look at it, but at the same time the cut was made, Verne Orr and Charlie Gabriel decided rather than stretch out programs which we have been admonished to not do, they were going to make a couple of vertical cuts, to cut back on the programs.

The T-46 had its head up above the foxhole because of technical reviews, the confluence of those two things, the fact that the T-46 was on its back, and we were not happy with what we saw at that plant and the budget pressures, back in the October-November time frame, caused this to be a casualty.

I don't paint such a rosy picture for the T-46. I think it is improved, but it will be over ceiling and we know Fairchild is going through the ceiling by about $88 million on the FSD program, and will come out of their pocket, and go through ceiling on lot one, we know that, and we suspect they will go through ceiling on lot two.

We have contracts in hand. That means the contractor has to bear that burden. In lot three, we were open, in an open negotiated position. Our concern is that that cost will continue to go up, so it is the confluence of all those things that caused the T-46 to be a casualty.

We would like to have a new trainer.

ESTIMATE OF T-46 PROGRAM

Mr. **Chappell.** Why don't you put in the record your best estimate of the program, and what is wrong with it at the present time?

Dr. **Cooper.** Yes, sir, there will be a program review that comes in within a week, so we will report back to you on that.

[The information follows:]

The flight test program has confirmed our judgement that the T-46 will be an excellent flying training platform. It has pointed out the need for augmented stall warning, reduced speed brake buffet, and reduced drag from the current design. These are significant but manageable problems.

More significant are the schedule dealys and contractor cost growth we have seen recently on the program. The program is now about a year behind schedule for delivery of the second test aircraft, and similar delays are occurring in the first production lot that we ordered in December 1984. No near term schedule recovery appears achievable. Contractor cost performance has also caused us concern. Costs well above ceiling in development, but more importantly in initial production, cause us concern for our cost estimates for the total program. The contractor will have to implement aggressive cost reduction efforts in production to assuage this concern.

C-17 PROGRAM

Mr. **Chappell.** Mr. Miller.

Mr. **Miller.** Talking about aircraft lift capability, the question has been raised in many quarters about whether we should go ahead with the C-17 in the face of our tight budget constraints, or build more C-5Bs, keep the C-130s and modify the C-141Bs to extend their service life.

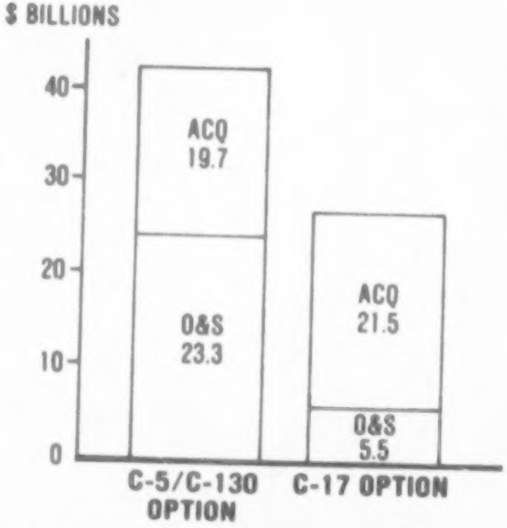
What is your response to the suggestion we could get more airlift capability, more quickly and at less cost in this way by modifying?

Dr. Cooper. We have a good response to that question. If we could take a moment of your time, we will lay it out for you.

[Slide follows:]

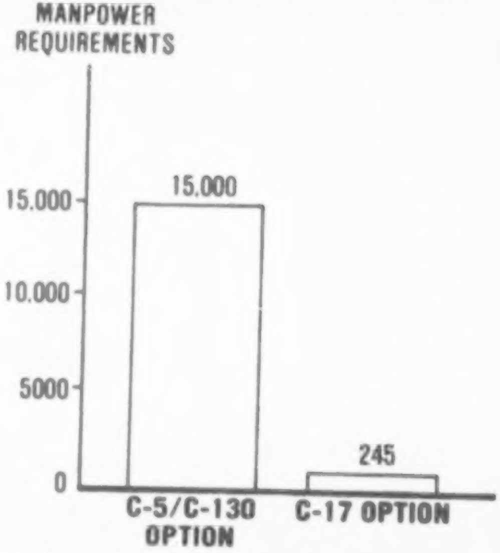
PROGRAM COST/MANPOWER REQUIREMENT COMPARISONS

30 YEAR PROGRAM COST



SUMMARY: $16 BILLION LIFE CYCLE COST SAVINGS WITH C-17 OPTION

MANPOWER REQUIREMENTS



SUMMARY: SIGNIFICANT MANPOWER SAVINGS WITH C-17

General RANDOLPH. This chart here shows a very quick summary of an analysis that was done and provided to the Congress a few years ago, but it really says, there are two options to provide the airlift.

One is to buy more C-5s and more C-130s, and this would be 156 more C-5s and 180 more C-130s.

You can see that the acquisition cost for the C-17s is more than the cost for the C-5, C-130, but the operations and support cost for the C-130/C-5 combination is significantly greater than the operations and support cost for the C-17.

One of the reasons for that change in the operations and support cost is the fact that a C-5A takes 60 maintenance man-hours per flying hour to maintain, whereas the C-17 has a contractual requirement, of 18.6 maintenance man-hours per flying hour, fully one-third of the maintenance man-hours per flying hour less in order to achieve the same capability.

Mr. MILLER. How is it possible to reduce those maintenance man-hours that much?

General RANDOLPH. By making the airplane much more reliable. It is using the technology of the eighties, and the C-17, as opposed to the technologies of the seventies, and the sixties, in the case of the C-5.

Inertial navigation, a very important part, will have 2,000 hours mean time before failure, whereas a similar piece of equipment in the C-5 has only 200 hours.

We will replace those in the C-5, but that is one example of the kinds of reliability. In the case of the airplane itself, it is designed to be more efficient for maintenance, and maintenance was part of the design.

For example, when you put your hand in to do some changes in the electronic boxes, they have little tapes that you pull out in the case of the C-17, they have these cannon plugs that you see in the C-5, different technology.

This is all in fiscal year 1982 dollars, and as a part of this savings, you see right here a major part of the maintenance is the fact that you save manpower.

It takes 15,000 more people than we have in the baseline to do the C-5/C-130 whereas it takes 245 people to do the same job with the C-17.

Mr. MILLER. 245 more?

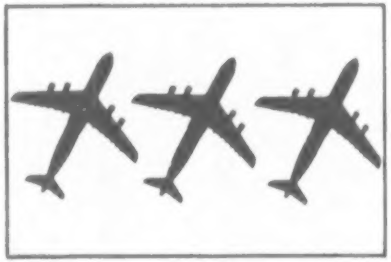
General RANDOLPH. Yes, sir. It doesn't take 245 people, but lots more than that. 245 over and above our current baseline of people.

[Slide follows:]

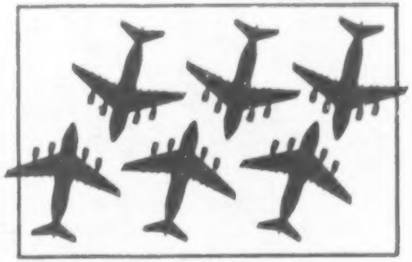
THROUGHPUT CAPABILITIES

	* TONS/ACFT	X	ACFT/DAY	=	THROUGHPUT
C—5	97.0	X	22.2	=	2,153 T/D
C—17	86.1	X	64.0	=	5,510 T/D

* CONUS TO EUROPE



C-5s



C-17s

600,000 SQ FT RAMP

2.6 TO 1 ADVANTAGE FOR C-17

General **Randolph**. If you would put on the next chart, this is the important part. Not only is it lower cost to operate, but you get a lot more cargo to the forward area.

This example uses a ramp, not an unusual size ramp, and you can see that the size of the C–17 and the offload capability, the C–17 is such that you can do a combat offload, push the pallets right off the airplane when it is on the ground.

There is a track, and you can move away from it, something that has been done for many years in the case of the C–130. You cannot do that with the C–5. It is not designed that way.

That is a lesson that we learned, not saying it is bad, but the C–5 has limitations because of the design that was put together.

If you take this into account, take the space, you can see, and I won't go through all these numbers, but when you add up the numbers some where between 2.5 and 3.5 more times cargo, we can put into the forward area for the Army using the C–17 than we can using the C–5, C–130 combination.

STRATEGIC BOMBER STUDY

Mr. **Miller**. In another area, when the Secretary of the Air Force was there the other day, we asked him some questions about the strategic bomber study that Congress mandated but which has not been completed on schedule, and we were told this study would be available in March.

Do you have a firm date as to when that will be completed?

Dr. **Cooper**. I had a meeting on that last week with Dr. Hicks, and I believe they wrote back to the committees and told you it would be available on April 1st, which is about two months' delayed, and it is our plan to get it over by April 1st.

Dr. Hicks has given very strict direction to try to comply with that date.

B–1B PRODUCTION LINE

Mr. **Miller**. Just one other question on strategic bombers. With regard to the B–1s, we know that there is a firm plan to construct 100.

Dr. **Cooper**. Yes.

Mr. **Miller**. I am not sure how that became the final figure. It is a good round figure, and all of that, but we do have tooling, the production line running, and if we are going to need additional bombers, and it may be some time before the Stealth comes on line, is it advisable to close down that B–1 line completely?

And then we lose the personnel and lose the tooling and the facilities? Is there thought in acquiring something to possibly keep that B–1 line going beyond the 100?

Dr. **Cooper**. I know you have asked that question before, and we would advise you to close down the B–1 line. Based on what we see in the advanced technology bomber program, we do not believe we need to buy additional B–1 bombers, and as a matter of fact, whatever money you put against the B–1 has to come from other Air Force programs, and that is money that we are just not willing to ante-up to keep the B–1 line warm, if you will.

So our recommendation to you is that definitely, we draw down the B-1 line and terminate at 100 aircraft. When we have the opportunity to talk in closed session about the Advanced Technology Bomber, we can give you more rationale for that decision.

Mr. CHAPPELL. Will the gentleman yield for one question at this point? When does your B-1 line shut down?

Dr. COOPER. The last aircraft delivers some time in 1988, Mr. Chairman. Part is already shut down.

Mr. CHAPPELL. What is the ATB line, when does your production line start?

Dr. COOPER. We would have to go into closed session to talk about that. Part of the B-1 line has already closed down, in term of long lead components.

Actually, if we were going to recommend to buy more B-1s, we would have recommended that to you last year, because we would have had to have long lead funding in the bill.

In terms of some of the critical parts, those vendors have gone out of the business. They could probably be resurrected, but at additional cost.

Mr. Miller, you asked Secretary Rourke to get back with you, and to give you an estimate of what it would cost to keep the option open. We are working on that answer right now, and I believe the Secretary will provide that to you.

CONTRACT PENALTIES

Mr. MILLER. Very good. I have heard something about the contracts that you were entering into, and the fact that there are penalties, if you cut back on the planes, the numbers——

Dr. COOPER. On the B-1?

Mr. MILLER. Not the B-1. This is in regard to contracts you are entering into at the present time. We are considering the impact of Gramm-Rudman-Hollings sequestration of budget cuts on defense contracts.

What is the Air Force doing right now to negotiate contracts so that we would avoid that extreme penalty. It appears that we are going to have a reduction in spending, and it appears that, if possible, action should be taken now to avoid contract penalties in the future.

Have you changed the contracts in some way? Will the contractors abide by a new set of rules that will allow you to reduce instead of increase without paying the penalty?

General RANDOLPH. The only types of contracts where we have the problem you refer to are multiyear contracts, and the reason why that is a problem is because a multiyear contract is a single contract.

For example, in the case of the F-16, we are in the process of negotiating a multiyear contract for 720 airplanes to be bought over a four-year period, but that is one single contract, not options.

That is what we would propose to buy. In that case, the way we have structured the contract is that the base is 180 airplanes.

We have flexibility from 180 to 216. As you notice in our request, we are asking for 216. If the Congress elects not to give us the money for 216, or Gramm-Rudman cuts that money back, then we have sufficient flexibility to bring that number down.

Now, the only other flexibility that we have is to take things out, and that is if, for example, we do not have the money to execute the contract, we could not buy the radar warning receiver and in fact, we are doing that in some cases.

We could just not buy it, and buy it at a later date. That gives us some flexibility, but that is very small, and very painful to do that, but in the final analysis, it is limited and we reach a point in the negotiating process where the contractor says, hey, that is not the deal I signed up for, let's sit down and renegotiate.

We can do that, but all of the savings that we have accrued, and I should not say all, but many savings will be lost in that process.

CONTRACT FLEXIBILITY

Mr. **Miller**. What I am asking, too, on contracts you will be signing now, so that you do not have the contractor coming back and saying, hey, that is not the deal that we negotiated, are you now negotiating deals that will allow you to make changes without paying an extreme penalty?

General **Randolph**. Yes, sir, and that is the thing I just described to you. The F–16 I just described is a response to allow that flexibility, to give us flexibility to draw down the numbers cf airplanes and still keep the benefits of a multi-year proposal.

Dr. **Cooper**. Could I comment on another aspect of this problem?

The single-year contract versus the multiyear contract, what General Randolph says is true. However, in some cases, we obtain contracts in a competitive environment, where we get the base contract for a year plus options on that contract.

What happens when you get cut back, you don't get a penalty in terms of a contingency liability, wherein you don't exercise the options, but a very good deal that you may have got in competition, if you have to cut the numbers back and can't exercise the option, you lose because you are now in an open environment and the cost goes up.

If our budget gets cut, we won't be able to exercise some of the options, and we will go in and renegotiate.

Mr. **Chappell**. Mr. Livingston?

Mr. **Livingston**. Thank you, Mr. Chairman.

First of all, Secretary Cooper and General Randolph, I want to welcome you. General Randolph, I understand this is your first time appearing before the committee.

General **Randolph**. The first time in this capacity, Mr. Livingston. I have appeared before in a different capacity.

Mr. **Livingston**. I want to officially welcome you in this new capacity, and I apologize for not being here earlier. I have been upstairs getting a briefing on SDI.

Dr. **Cooper**. You missed a sterling presentation.

Mr. **Livingston**. I know I did.

Your explanations of sequestration under Gramm-Rudman-Hollings and the impact of the multiyear contracting and the C–17 all were superb.

I want to say, Mr. Chairman, that before I get into any significant questions, that I just got a copy of this press release from Joe Addabbo's office, and I am very, very sorry to read this news that was just released.

We are sorry to hear about that.

B-1B VERSUS ATB

I have some questions that relate to what Mr. Miller asked you about with respect to the B-1B versus the ATB, and I would like to submit those for the record.

Mr. LIVINGSTON. I have the same concerns, but then I have to say that I have also been to a closed briefing on the ATB, and am highly optimistic about that system, so we certainly have to trust you all to make the best decision with the information available to you, but we would like to get these questions answered.

General RANDOLPH. We will respond for the record, Mr. Livingston.

[CLERK'S NOTE.—Questions submitted by Mr. Livingston and the answers thereto follow:]

B-52 RETIREMENT

Question. How long does the Air Force intend to retain the B-52 in active service?

Answer. The B-52 will remain a viable part of the bomber force structure into the 1990s. Ninety eight ALCM B-52Gs will remain in a shoot-and-penetrate role until the late 1980s, and then assume a standoff mission until their retirement beginning in the early 1990s as the ATB deploys. Sixty nine non-ALCM B-52Gs will be dedicated to conventional operations from the late 1980s into the 1990s. Ninety six B-52Hs will transition from pure penetrating bombers to the shoot-and-penetrate role as they are modified for cruise missile carriage. These aircraft will then transition to a full standoff role in the early 1990s.

Question. How much does it cost to keep the B-52 fleet in service; and how much do we spend each year for all B-52 related costs, to include modifications, operations and maintenance, personnel, and military construction?

Answer. The cost to keep the 241 aircraft/16 squadron B-52 fleet in service is approximately $1.1B/year. This includes the normal day-to-day operational costs for replenishment spares, systems support and general support, aviation fuel as well as the military and civilian personnel required. When all costs related to the B-52 are considered, the approximate total cost/year is $1.68B. The cost breakout is as follows:

[Dollars in millions]

APPN:	*Cost*
3010 Aircraft procurement (modifications, spares, equipment, etc.)	$719.3
3020 Missile procurement (modifications, spares, equipment for Harpoon)	.4
3080 Other Procurement (communications, electronics)	3.5
3300 Military Construction	10.6
3400 Operations and Maintenance (civilian personnel, travel, equipment transportation, contracted maintenance, aviation fuel, etc.)	

3500 Military Personnel (approx 3000 officers and 15,900 enlisted)	513.0
Total[1]	1.68

[1] This cost includes the $1.1B already referred to above.

Question. How much money could be saved by earlier retirements of B/52 aircraft?

Answer. The B-52 force provides an extremely effective capability for the dollars invested. Even if the decision were made to retire the B-52s immediately, only an estimated 3-4 billion dollars could be saved and a vital warfighting capability would be lost with no replacement system fielded. Depending on the aircraft retirement schedule, a massive "upfront" cost would be required to retire this force structure. Costs to rebase other aircraft, to retain the more than 18,000 people in direct support of this weapon system, to "mothball" the aircraft, and to cancel support/modification contracts would offset a great deal of the savings. In addition, the impacts of nation-wide base closings resulting in lost jobs and other environmental impact would be extremely costly.

The B-52 force will be needed as a vital part of our deterrent capability into the 1990s. The ALCM B-52Gs will retain an important role in the SIOP until after the deployment of the B-1 and initial deployment of the ATB. In addition, B-52G non-ALCM aircraft are necessary to provide conventional theater long range capability into the 1990s while the B-52H force is planned to perform a standoff cruise missile role into the 1990s.

B-1B

Question. Could you tell me in "then year" dollars all the costs associated with the current 100 B-1B program, and what amount of these funds are yet to be appropriated?

Answer. The B-1B program's total funding, as of the FY 1987 President's Budget, was $27.2 billion (then year dollars). With Gramm-Rudman-Hollings reductions removed, the program is now funded at $26.8 billion (then year). Of this total, all but $161.4M has already been appropriated. The $161.4M represents remaining RDT&E funding required.

Question. Do you anticipate the B-1B program to go over "cap" cost established by Congress and is the program on schedule?

Answer. The B-1B program is currently funded at $19.6 billion (FY 1981 dollars), will below the certified "cap" of $20.5 billion. At the current funding level, the program's major multiyear procurement contracts are essentially budgeted to target price, well below the government's estimate of "most probable cost." Because contractor performance to target price represents a highly optimistic cost outcome, there is a very good chance that supplemental funding will be required in the future. Even with this additional funding, however, we remain confident that the program can be brought in under the certified "cap" of $20.5 billion (FY 1981 dollars).

The B-1B program remains on schedule.

Question. How much would additional B-1Bs cost?

Answer. The cost of additional B-1Bs depends upon a number of factors: Quantity desired; production rate; and timing of the decision. An October 1986 decision to procure an additional 24 B–1Bs at a rate of 2 aircraft per month should cost about $4.0 billion in FY 1981 dollars, or $6.7 billion in then year dollars.

Question. Has the Department of Defense made any studies or analysis of enhanced versions of the B–1B?

Answer. The Air Force constantly analyzes potential ways to improve/maintain force effectiveness in response to the expansion and modernization of the Soviet threat. Consideration of changes to the B–1B bomber's configuration is part of this ongoing effort. Although funds for such changes are not now programmed in the Air Force's Five Year Defense Plan, some candidates for future product improvement are listed below:

a. STD–MIL–1760 Aircraft/Store Electrical Standard Interface to facilitate compatibility with future weapons. Would enhance operational flexibility.

b. Forward Looking Infrared System (FLIR). Space and weight provisions exist for a FLIR should future missions indicate requirement for this sensor capability.

c. Added Electronic Countermeasures. Burried waveguide provisions are included for incorporation of advanced countermeasures when they are needed in the future.

Question. Assuming a decision was made to buy additional B–1Bs, when could they be delivered?

Answer. Because lead times for major B–1B subassemblies approach 3 years, an immediate decision to procure additional B–1Bs would result in delivery of the 101st B–1B in about April 1989. FY 1986 funding would be required. However, the Air Force fully supports the President's Two Bomber program which calls for deploying a total force of 100 B–1Bs. Any deviation from this charted course is undesired.

COST OF ATB

Question. Could you explain to me all the cost associated with the ATB program, to include R&D, procurement, and military construction in "then-year" dollars?

Answer. The detailed costs associated with the ATB program are specifically controlled under special access procedures. Procedures have been established to provide this information through the committee staff. Secretary Weinberger by letter of January 31, 1986, provided an estimate of the total program cost.

Question. What is the funding profile for the ATB program (R&D and procurement) for the next five years in then year dollars?

Answer. The detailed funding profile for the ATB program is specifically controlled under SAR procedures. Procedures have been established to provide this information through the committee staff.

Question. What level of confidence do you have that the ATB program can be brought in at those estimated costs?

Answer. The requested funding for the ATB represents our best estimate at this time of the budget requirements necessary to meet the President's two-bomber program schedule.

Question. When would program risks be sufficently low to allow a fixed-price contract to be signed on the ATB program?

Answer. The feasibility of a fixed-price contract will be adressed at the appropriate point in the acquisition cycle for the ATB. Specific contract information associated with the ATB program is specifically controlled under special access procedures. Procedures have been established to provide this information through the committee staff.

Question. When will the first production ATB be delivered, and when do you anticipate the IOC of the ATB?

Answer. We are committed to maintaining the production schedule which supports an early 1990's IOC. However, the details of the ATB production schedule are specifically controlled under special assess procedures. Procedures have been established to provide this information through the committee staff.

Question. Will Gramm-Rudman-Hollings have any impact on funding for the ATB program?

Answer. The ATB program was exempted from the provisions of Gramm-Rudman-Hollings during FY86. Any funding reduction in the ATB program would impact program schedule and cost.

Question. What is the scheduled impact if planned funding levels for the ATB are reduced by Gramm-Rudman-Hollings over the next five years?

Answer. Reductions in the level of funding for the ATB program will stretch-out the schedule and increase the total program cost. Details of the ATB schedule are specifically controlled under special access procedures. Procedures have been established to provide this information through the committee staff.

[CLERK'S NOTE.—End of questions submitted by Mr. Livingston.]

LANTIRN

Mr. CHAPPELL. Gentlemen, one quick question.

Is the LANTIRN program on schedule?

Dr. COOPER. Yes, sir.

General RANDOLPH. Yes, sir.

Mr. CHAPPELL. Both the navigational pod and the acquisition pod?

Dr. COOPER. Targeting pod? If you recall, Mr. Chairman, we made a decision last year to enter production on the navigation pod, which is going well, and we are approaching a production decision this year on the targeting pod.

As far as we know, it is going very well, and hasn't come up yet for the formal production decision, but the last report I have, and General Randolph has additional information, it looks like it is going well.

General RANDOLPH. I flew it, Mr. Chairman, and I was extremely impressed with, number one, the way the navigation pod performed and was absolutely superb, but the way the targeting pod performed in being able to detect small targets at relatively long ranges, five and six miles, so it is very good.

Mr. CHAPPELL. Gentlemen, let me say that we especially appreciate the great work you guys do. You give us good information, and you are straight forward, and we appreciate that.

We appreciate all that you have done.

CHAIRMAN JOSEPH P. ADDABBO

Let me read a press release, if I might. It is grievous to all of us, and this is a press release from Congressman Joe Addabbo's office.

Congress Joseph P. Addabbo, Democrat from New York, who collapsed last week in Washington, and has been hospitalized at Georgetown University Hospital ever since, has slipped into a coma and is not expected to survive.

The 13-term Democrat was hospitalized for five months in 1985 as a result of massive kidney failure. The seizure that felled Congressman Addabbo on March 6 and caused a cardiac arrest was brought on by the spread of cancer cells to the brain.

The Congressman had been fighting bladder cancer for six years. Congressman Addabbo is to be moved to Walter Reed Hospital today.

Gentlemen, we find that all of this is disheartening, and all of us express our sincere sympathy to the family, and we wish for still a miracle and a return to health on the part of our very beloved chairman.

I believe it would be in order if we stood for a moment of silence and prayer for a moment.

[Brief silence.]

Mr. **CHAPPELL**. Mr. Dicks, you may proceed.

AIR FORCE ONE

Mr. **DICKS**. What is the status of the funding provided in the fiscal year 1986 appropriation for acquisition for two aircraft for the Air Force One mission?

Dr. **COOPER**. I will go ahead and comment on that, and then General Randolph may want to add to it. Mr. Dicks, as you will recall, last year the Appropriations Committee appropriated $280 million for procurement and $20 million for research and development for a new Air Force One.

Those funds currently are appropriated without authorization, and you also put language in your report that said that before we spend that money, we needed to go back to the two Armed Services Committees and gain their approval.

We are in the process of formally requesting the Armed Services Committee to approve that money, and we got additional funds in 1987 for initial spares and support equipment and military construction, and a modest sum for research and development that we are requesting your support of.

Neither Armed Services Committee has yet to give their approval. It is important to us that we gain that approval by May, because we are currently in source selection, and we believe we will make a source selection by May, and we would like to go on contract, if we may.

AIR FORCE ONE COMPETITION

Mr. **DICKS**. I am highly supportive of this program. I understand the specifications were adjusted to eliminate the need to be able to take off on a hot day from Andrews in order to keep the DC-10 in the competition. In addition, the safety margin of 1,000 feet on the runway were ignored for the same purpose.

Is this correct?

General **Randolph**. Mr. Dicks, there is no way that we can ignore the compromises on the safety margin in flying the President and both airplanes can meet our requirements in terms of being able to take off on a hot day.

The hot day takeoff situation you may be referring to is what you have to do in order to meet safety requirements, is put on less fuel.

I know of no change we made to accommodate one airplane or another. The requirements were specified to us by the people who fly the airplane, the 89th Military Airlift Wing.

Mr. **Dicks**. I would appreciate your checking on that for the record. You have got a cap on this program of $280 million that the other body imposed. Has the Air Force reviewed the appropriateness of this cap?

General **Randolph**. Mr. Dicks, I have personally reviewed the proposals, and I can say to you that although the negotiations may be difficult, either of the two contractors can live within the cap.

[The information follows:]

As you indicated, we did modify the preliminary performance requirements prior to issuing the Request for Proposal (RFP) to interested bidders. In our review of requirements to be included in the RFP, we determined that the takeoff requirements from Andrews AFB were overly restrictive. Initially, we limited takeoff to the shorter of two runways on a hot day under wet conditions. We altered the requirement to more reasonably reflect the intended use of the aircraft under standard day conditions. This change does not sacrifice any safety margin during the operation of the Air Force One aircraft. Prior to any departure, exact performance computations will be made to insure that the aircraft is capable of departure within standard safety parameters.

Mr. **Dicks**. Will cost be the only consideration in the award decision, or will aircraft capabilities be a factor as well?

General **Randolph**. Both factors will be taken into account. The process that we use is that the capabilities will be scored, and then we will look at the cost and test the cost for reasonableness, and the lowest cost airplane for the capabilities provided will be the one selected.

GROUND PROXIMITY WARNING SYSTEMS REPORT

Mr. **Dicks**. This committee, in its fiscal year 1986 report indicated its support for the use of $10 million by the Air Force for the acquisition of second generation or better ground proximity warning systems to avoid control flights in terrain accidents.

The committee indicated it expected a report from the Services on their plans for utilizing funds in such a manner. Has the Air Force made such a report and what are your plans?

General **Randolph**. We have put together a plan for ground proximity warning systems. We do have such a plan which we can provide to you for the record. All of our large airplanes now, the 141s, 130s, C–5s, and they have a phase one—we would like to put in the phase two, which are those commonly used on the airliners, and we are in the process of acquiring those phase two warning sensors for those large airplanes.

In the case of the fighters, we have a ground collision avoidance system we are looking at, which is a slightly different approach.

We believe that the currently designed system for large airplanes does not apply to fighters directly. We are putting them in our large airplanes and we are looking at a system for fighters.

[The information follows:]

The following transport aircraft have a first generation ground proximity warning system installed: C-5A, C-9, C-137, C-140, C-141B, and T-43. Second generation systems are either on or planned for (as part of the aircraft procurement package) the following aircraft: C-5B, C-20, E-4, KC-10, RC-135, and C-17).

The Air Force is presently waiting for the results of a risk assessment that will be accomplished by the Air Force Logistics Command Logistics Operations Center in conjunction with the Air Force Inspection and Safety Center. Results of this assessment are expected by 30 May 1986. The primary user of transport aircraft, the Military Airlift Command, has stated that the priority for installing second generation or better ground proximity warning systems in their aircraft will, in all probability, remain low on their modification priority list, unless the risk assessment shows an unexpectedly higher risk of current operation.

The controlled flight into terrain rate for fighter/attack aircraft is roughly 12 times higher than the rate for transport aircraft. The FY 87 President's Budget includes funds to procure a ground collision avoidance system (GCAS) for A-10 aircraft. In addition, the Air Force is completing a feasibility study on a standard GCAS. The key feature of both the A-10 and standard GCAS is government furnished/developed software algorithms which when integrated with existing systems (such as radar altimeters) will produce the desired capability. Further, the Air Force believes that the standard GCAS algorithm is adaptable to transport aircraft and may provide a relatively inexpensive GCAS or GPWS capability for those aircraft.

Mr. DICKS. You have no money in the budget?

General RANDOLPH. This is correct, for 1987.

B-52 MODIFICATIONS

Mr. DICKS. As we transition into the B-1 force, the Air Force plans to have 69 non-ALCM B-52Gs assume the bulk of the conventional bomber role.

Have modifications been made or are they planned to accommodate this transition?

General RANDOLPH. The answer is yes, sir, the modifications have been made, and we are doing transition.

Mr. DICKS. What capabilities will this force provide that do not now exist?

General RANDOLPH. Dr. Cooper?

Dr. COOPER. Not to avoid your question, but to discuss some of that, we will need to go into a higher level of classification.

There are additional capabilities.

Mr. DICKS. The CBO suggested a budget cutting option that would retire ALCM Carrier B-52Gs as the B-1 is fielded, rather than as the ATB is fielded.

What are your comments on this suggested option? What impact would it have on the SIOP.

General RANDOLPH. Let me show you a chart on that, Mr. Dicks. While he is getting it together, I will give you some of the information.

[CLERK'S NOTE.—Classified slide removed.]

If we took all of the B-52s and retired every one of them right now, today, and took all of the money and took all of the money necessary to keep these B52s going over the next five years, we will yield about $8 billion, and with $8 billion, we could buy 31 B-1Bs, but look at the penalty that we pay.

We not only lose airframes, but we lose over 2,000 stations for carrying cruise missiles, and we lose over 480 stations for carrying gravity weapons or SRAMs.

Dr. **Cooper**. And not use the money to buy B-1s, phase out the B-52s period, so you don't even get the 31 additional B-1s.

General **Randolph**. If you don't buy these, then this problem here becomes worse, but we simply would——

B-1B Flight Performance

Mr. **Dicks**. We are not talking about buying additional B-1s.

We are told that the B-1B is not living up to expectations in terms of flight performance, that there are problems. Can you tell us about that, General?

General **Randolph**. Yes, sir, the problem that is being referred to is that the airplane, in heavyweight flying at low altitudes, has a stability problem. I am not at all sure that I would call it a problem.

We knew that the stability would not be what we want it to be for heavyweight flying, and by heavyweight, we are talking about in excess of 400,000 pounds at low altitude.

We had always planned to have a stability enhancement capability put into the airplane. That stability enhancement design is in progress right now, and will be incorporated into the airplane and once that is done, then the airplane will be able to fly the heavyweights that we need it to fly at the low altitudes.

Mr. **Dicks**. What does that mean? Does it mean that when it is full up with fuel and full up with its weapons, it has a stability problem?

General **Randolph**. It has a problem where you can put the airplane in that regime, into a mode where it can become unstable and unsafe to fly.

Mr. **Chappell**. Moving the CG too far back?

General **Randolph**. No, sir, but a problem that the airplane does not have the control authority with those heavyweights. What we are doing, though, since it has an electronic flight control system, and this is all done electronically, we are designing in an enhancement in our system, so it does not allow the pilot to get himself into conditions where he needs that control authority, and it is not available.

That's all we are doing.

Mr. **Dicks**. Tell me what that does to us in terms of its mission? What do you have to compensate for that? Does it have less range?

General **Randolph**. Oh, no, sir, in assuming that we do this properly and I have no reason to believe that we will not, there is no compromise in the mission.

If we did not do that, then we could not carry the payload necessary in order to make the B-1 fulfill its mission.

It is a matter of weight, not range. You are right, you could also take the fuel off and put bombs on, but you have got to take something off the airplane to bring the weight down.

Mr. **Dicks**. How much do you have to take off?

General RANDOLPH. Probably 100,000 pounds.

Mr. DICKS. How much are you carrying?

General RANDOLPH. Payload weight? Payload weight is probably 120,000 pounds. The gross weight is 470,000 pounds. Payload weight is somewhere around 100,000, 120,000.

Mr. DICKS. How much will you have to take off to make it stable?

General RANDOLPH. No, sir, we are going to change the flight control system to improve the stability so we can fly at the design gross weight.

Mr. DICKS. When does it come on and how much does it cost?

General RANDOLPH. It is all within the $20.5 cost. It is within the $19.6 that we have got right now. We start testing it with number nine, the airplane we have already got, and that airplane is configured to test this. The design has acutally been completed, and we are now about to start the test phase with B-1B number 9.

Dr. COOPER. We are going to do it with some of that ECO money.

Mr. CHAPPELL. Is this a lateral control problem?

General RANDOLPH. A control authority problem. One of the things you don't want to do is to get the airplane to a high angle of attack at low speeds, because if it gets into too high angle attack rather than being able to push it back, it pushes up and you lose the airplane.

What this redesigned flight control system will do is not allow the pilot to get into that high angle of attack. It is a computer thing.

Mr. CHAPPELL. Mr. Dicks.

Mr. DICKS. Okay, we have this problem. You think it is correctable, right?

General RANDOLPH. It is already corrected. We have not tested it yet.

Mr. DICKS. Are there any other performance problems of significance that you have found in your production airplane?

General RANDOLPH. None that I know of, Mr. Dicks. We can recheck that. I know of no other problems of significance that have been reported to us.

STRATEGIC BOMBER STUDY

Mr. DICKS. We are going to have a separate hearing, but the Air Force position is that we transition at the end of 100 B-1s to the advanced technology bomber, is that correct?

General RANDOLPH. Yes, sir.

Mr. DICKS. The report on cost, we can't get into that at this level of classification, has been submitted to the Armed Services Committee?

Dr. COOPER. No. The bomber study, we estimate right now we will have it here by April 1st. It was supposed to be done by February 1st. It is acutally a report that is tasked to the Secretary of Defense.

The Air Force has made its input, and they are now in the process of taking that and doing whatever they are doing on the third floor in the Secretary's office.

They have asked for a little more time. It is not just a cost report. We will go through all the cost arguments.

Mr. DICKS. Capability?

Dr. COOPER. Absolutely.

Mr. DICKS. There is going to be a lot of pressure put on the Congress by some to scrap the ATB and continue to build additional B-1s. My own assessment is that the new plane has so much more in capability that it is worth the additional cost, and the two planes complement themselves quite well.

Dr. COOPER. And they confound and confuse the Soviets in trying to defend against them. It is a multiple offense not unlike you had in Washington.

Mr. DICKS. We ran up the middle.

One other thing, I was just in Wichita, and they really believe there are some things you can do with the B-52s in terms of upgrading some of the equipment that would enhance the capability of those planes. It has been very hard to get any money, because you have so many other things. But I hope before you start making decisions to phase out B-52s, that you talk to them, because they have some very interesting ideas of how you can use those into the nineties, and gives us more capability. Those numbers that you showed us earlier really indicate what happens if you prematurely pull those B-52s out.

Dr. COOPER. We have changed the phase-out dates of the B-52 from the original two-bomber program, when it was presented in 1981. They now stay in our inventory for a longer period of time, and I can assure you that the Commander-in-Chief of the Strategic Air Command would agree with you on not phasing out B-52s too early.

The question of what happens to the B-52 beyond 1995 is still an open issue, and that is a decision that can be taken in concert with the budgets we have.

Mr. DICKS. Mr. Chairman, did you get to the C-17?

All right. Thank you very much.

I have a few questions I would like you to answer for the record.

[CLERK'S NOTE.—Questions submitted by Mr. Dicks and the answers thereto follow:]

AIR FORCE ONE

Question. What is the status of the funding provided in the Fiscal Year 1986 appropriation for acquisition of two aircraft for the Air Force One mission?

Answer. The OSD Comptroller is currently withholding program funding pending approval of the Air Force One Replacement Program by the House and Senate Armed Services Committees.

Question. Your statement notes that a contract award must be made by next month in order for McDonnell Douglas to compete on this program. Is it normal practice to have such considerations dictate contract award?

Answer. We strongly believe that competition is paramount to this program in terms of reducing costs and maintaining public confidence in Department of Defense procurement. It is normal to have considerations such as the one highlighted above dictate how we structure acquisition programs in order to insure competition is maintained.

Question. Will this provide sufficient time to fully evaluate and negotiate the proposal?

Answer. Yes, we believe it will. In order to have competition, we have compressed some aspects of the program, but are confident that we have allowed sufficient time for the source selection and contract award process.

Question. Were there any other actions taken to accommodate one of the contractors? For example I understand the specifications were adjusted to eliminate the need to be able to take off on a hot day from Andrews in order to keep the DC–10 in the competition, and that in addition the safety margin of 1,000 feet on the runway was ignored for the same purpose. Is this correct?

Answer. As you indicated, we did modify the preliminary performance requirements prior to issuing the Request for Proposal (RFP) to interested bidders. In our review of all requirements to be included in the RFP, we determined that the takeoff requirements from Andrews AFB were overly restrictive. Initially, we limited takeoff to the shorter of two runways on a hot day under wet conditions. We altered the requirement to more reasonably reflect the intended use of the aircraft under standard day conditions. This change does not sacrifice any safety margin during the operation of the Air Force One aircraft. Prior to any departure, exact performance computations will be made to insure that the aircraft is capable of departure within standard safety parameters.

Question. A $280 million cap has been placed on the program. Has the Air Force reviewed the appropriateness of ~~this~~ cap? Will cost be the only consideration in the award decision, or will aircraft capabilities be a factor as well?

Answer. Yes, we have. Although it is not yet certain, it may be possible to procure the two aircraft within the procurement cap. We won't know for sure until the contractors' actual costs are known. Final scrubbing and negotiating of costs will be done in the source selection process which is to be completed in May 86. As we indicated in the FY 87 President's Budget, we will need additional R&D funds for the program and procurement funds for initial spares and support requirements. R&D and spares funds were not included in the cap. Cost will be only one consideration in the source selection process. Aircraft capabilities and ability to meet requirements weigh very heavily in this process.

Question. In January 1985 a "Streamline Advocate" was appointed in the Air Force. One of his responsibilities is to insure that we avoid overspecification of programs. Has the Streamline Advocate been involved in reviewing this program?

Answer. You are correct, one of the streamline advocate's responsibilities is to insure that we avoid overspecification of programs; however, he does not specifically review each program. Rather, the streamline advocate provides policy guidance concerning the overall Air Force acquisition process. The Air Force One replacement aircraft will be off-the-shelf, commercial, wide body aircraft so we involved industry early on in the acquisition cycle. We specified general requirements and let the contractors develop the specific design to meet requirements, and we used advanced draft

Request for Proposals to clarify system requirements. In short, we tailored requirements to meet this particular program's needs and adhered completely to the philosophy and intent of acquisition streamlining.

GROUND PROXIMITY WARNING SYSTEM

Question. This Committee in its Fiscal Year 1986 report indicated its support for the use of $10 million by the Air Force for the acquisition of second generation or better ground proximity warning systems, to avoid controlled flight into terrain accidents. The Committee indicated that it expected a report from each of the services on their plans for utilizing funds in such a manner. Has the Air Force made such a report and what are your plans?

Answer. A report has not been submitted. The Air Force is presently waiting for the results of a risk assessment that will be accomplished by the Air Force Logistics Command Logistics Operations Center in conjunction with the Air Force Inspection and Safety Center. Results of this assessment are expected by 30 May 1986. The primary user of transport aircraft, the Military Airlift Command, has stated that the priority for installing second generation or better ground proximity warning systems in their aircraft will, in all probability, remain low on their modification priority list, unless the risk assessment shows an unexpectedly higher risk of current operation.

The controlled flight into terrain rate for fighter/attack aircraft is roughly 12 times higher than the rate for transport aircraft. The FY 87 President's Budget includes funds to procure a ground collision avoidance system (GCAS) for A–10 aircraft. In addition, the Air Force is completing a feasibility study on a standard GCAS. The key feature of both the A–10 and standard GCAS is government furnished/developed software algorithms that when integrated with existing systems (such as radar altimeters) will produce the desired capability. Further, the Air Force believes that the standard GCAS algorithm is adaptable to transport aircraft and may provide a relatively inexpensive GCAS or GPWS capability for those aircraft.

Question. Have there been accidents in the last 3 years involving Air Force aircraft which might have been preventable if such equipment had been installed on the aircraft? What is your total controlled-flight-into-terrain (CFIT) number for the last 3 years?

Answer. Transport-Type Aircraft—There have been mishaps involving transport-type aircraft in the last 3 years where a Ground Proximity Warning System (GPWS) warning of possible collision with the terrain most likely would have been available. Whether the warning would have prevented the mishap depends on a number of factors: crew reaction time, time available from warning to impact, and crew corrective action. For the last 3 years, transport aircraft experienced a total of five Class A CFIT mishaps.

Fighter/Attack-Type Aircraft—Commercially available GPWS cannot provide CFIT protection to fighter/attack-type aircraft throughout their mission. Recent USAF development and tests have produced a system applicable to fighter/attack operations. It will be retrofitted into the A–10 fleet in the near term. In the last

3 years, fighter/attack aircraft have been involved in 32 Class A CFIT mishaps. The vast majority of these have occurred during low level or weapons delivery phases of flight.

Question. The Air Force has installed GPWS on some of its transport aircraft. What is the safety record of such aircraft compared to those aircraft not so equipped?

Answer. The following transport-type fleets are equipped with either first or second generation GPWS: C-5A/B, C-9, C-20, C-22, C-135 (27 aircraft), C-137 (5 aircraft), C-141, E-4, KC-10, RC-135 (retrofit still in progress), and T-43. Aircraft that entered the inventory GPWS-equipped are the KC-10, C-20, and C-5B. The rest received GPWS through retrofit, most in the 1978-1980 time frame. Fleets that presently do not have a GPWS are the C-12, C-21, C-130, E-3, KC-135, and T-39. The following breakdown compares controlled-flight-into-terrain (CFIT) mishaps for GPWS-equipped and unequipped aircrft during their fleet lifetimes.

	CFIT mishaps	
	Aircraft w/o GPWS	Aircraft with GPWS
C-5A	[1] 1	1
C-5B	GPWS Equipped	0
C-9	1	0
C-12	1	Not Equipped
C-20	GPWS Equipped	0
C-21	0	Not Equipped
C-22	GPWS Equipped	0
C-130	22	Not Equipped
C-135	0	0
C-137	0	0
C-141	[1] 4	2
E-3	0	Not Equipped
E-4	0	0
KC-10	GPWS Equipped	0
KC-135	15	Not Equipped
RC-135	2	0
T-39	6	Not Equipped
T-43	0	0

[1] Includes one mishap where aircraft was GPWS-equipped but system was inhibited by the crew for a no-flap landing.

Because the fleets that were retrofitted operated much longer without GPWS than with it, the above comparison is not the best measure of GPWS safety record. Assuming flying hours before 1980 were without GPWS operation for the retrofitted fleets, a rate comparison over all fleet operating hours shows that aircraft without GPWS have had twice as many CFIT mishaps per flight hour as those with GPWS.

NON-ALCM B-52G's

Question. As we transition the B-1 into the force, the Air Force plans to have 69 non-ALCM B-52Gs assume the bulk of the conventional bomber role. What modifications have been made or are planned to accommodate this transition? What capabilities will this force provide that do not now exist?

Answer. Current Air Force plans call for 69 non-ALCM B-52Gs to be removed from primary SIOP taskings ——— and dedicated to the conventional role. These aircraft are the same aircraft which received modifications in the past to enhance their conventional capabilities. These modifications included incorporation of external carriage capability for a variety of conventional gravity munitions and naval mines as well as integration of high drag munitions into the internal/external release sequence of the B-52G. Additionally, thirty aircraft are fully modified for Harpoon missile launch. The fire control system (avionics associated with the tail gun) is also undergoing modification to increase its reliability/maintainability. Along with the various reliability/maintainability updates being accomplished on the entire B-52 fleet, the 69 non-ALCM B-52Gs are also being modified with: an Integrated Conventional Stores Management System which will enable these aircraft to carry, program and launch new smart conventional gravity and standoff weapons; the Global Positioning System which will provide increased navigation and weapon delivery accuracy; Vinson tactical secure voice to enhance connectivity between forces operating in a hostile electronic environment.

Responsiveness is the greatest improvement to conventional warfighting capability as a result of dedicating a primary conventional B-52G force. These 69 B-52Gs will no longer require Joint Chiefs of Staff release from their SIOP mission and will always be available to support theater CINCs with a long range, rapid response, large diversified payload capability.

Question. I understand that you have been working with Navy for use of such bombers to assist in the maritime patrol role. What is the status of this effort?

Answer. The Air Force continues to work with the Navy today, as it has in the past, with maritime patrol and other maritime support missions. The use of the B-52G in support of maritime patrol and other maritime missions is rooted in the National Security Act of 1947 and enumerated in JCS Pub 2 and DODD 5100.1. Ever since 1982, Defense Guidance has directed that the Air Force work with the Navy on defense of sea lines of communication. Additionally AFR 23-12 specifically assigns CINCSAC the responsibility to develop and maintain techniques to use strategic aerospace forces for: maritime surveillance; interdiction of enemy seapower; antisubmarine warfare and protection of shipping; and, aerial mine laying.

Strategic Air Command's maritime functions are performed within the context of Memorandums of Agreement (MOA) and JCS approved plans. A half dozen Air Force/Navy MOAs have been codified since the early 1970s which outline responsibilities of each of the Services. The most recent of these is a January 1984 MOA outlining Air Force and Navy responsibilities for employment of the Harpoon anti-ship attack missile on the B-52G.

Question. The Congressional Budget Office has suggested a budget cutting option that would retire ALCM B-52Gs as the B-1B is fielded. What are your comments on this suggested option? What impact would it have on the SIOP?

Answer. The Air Force plans to retire ALCM B-52Gs as the ATB is deployed. This planned force structure maintains the best mix between penetrating and standoff bombers placing maximum stress on the Soviet defenses. The combination of penetrating bombers and standoff cruise missile carrying aircraft complicates the Soviet air defense problem.

Retiring the ALCM B-52Gs early and loading cruise missiles on the B-1B will have an overall negative impact on the SIOP. The B-1B, when carrying cruise missiles, has a smaller operational internal weapons load because of range and payload considerations. This detracts from the primary role of the B-1B, in this time frame, as the primary penetrating bomber. Thus, retiring ALCM B-52Gs earlier than planned, without the addition of penetrating bomber weapons provided by ATB deployment, would result in a loss of SIOP capability.

[CLERK'S NOTE.—End of questions submitted by Mr. Dicks.]

Mr. CHAPPELL. There are also some committee questions for you to answer for the record.

[CLERK'S NOTE.—Questions submitted by Mr. Chappell and the answers thereto follow:]

EXCESSIVE USE OF UNPRICED CONTRACTS

Question. The Air Force had approximately $13 billion of unpriced contracts on September 30, 1985, which is the highest in the Defense Department. Under such contracts, DoD orders items without worrying about the price. However, when it comes time to negotiate with the contractors on price, DoD has lost most of its leverage. Dr. Cooper, why has the Air Force used so many unpriced contracts? Was this done simply to obtain higher obligation rates, in order to avoid budget cuts?

Answer. The Air Force does not order items on Undefinitized Contract Actions (UCAs) without worrying about the price. Quite the contrary, before a UCA is issued the contractor and the government mutually agree to a not-to-exceed (NTE) price. This NTE price limits the government's total liability on the contract.

An undefinitized contract properly issued and definitized in a timely manner does not necessarily weaken the Air Force's negotiation position. In fact, the use of UCAs often result in a lower price by avoiding costly production breaks, reducing the contractors' need to price contingencies, or by implementing cost reduction proposals in a timely fashion.

The Air Force Federal Acquisition Regulation Supplement limits the use of undefinitized contracts to unique situations requiring immediate action to meet mission requirements. During FY84, we obligated 25.8 percent of our contracting dollars initially as UCAs. During FY85 the Air Force increased the controls over UCAs and the management attention given to them. As a result, issuance of UCAs fell from 25.8 percent in FY84 to 16.8 percent during FY85. However, by the end of FY85, the Air Force UCA backlog rose to a high of $12.9 billion. This slowdown in the definitization process resulted from a combination of factors. The impact of the many procurement reforms and a shortage of trained people caused severe perturbations in the acquisition process. This was reflected in the dramatic growth in acquisition leadtimes. In Air Force Logistics Command, the average acquisition leadtime grew from 180 days in FY83 to 276 days during FY85. With new requirements such as competition advocate screening, an influx of inexperienced personnel, and lengthening leadtimes, undefinitized contracts were used to meet urgent field and depot requirements.

Undefinitized contracts are not used to obtain higher obligation rates. Rather, UCAs are used to begin work immediately when the government would be injured financially or otherwise.

Question. An August, 1982 Air Force Audit (#818105) showed that the Air Force had a major problem with excessive use of unpriced contracts. Why has it taken so long to address the problem?

Answer. The Air Force initiated corrective management actions pursuant to the Air Force Audit referenced. However since 1982 new pressures have been exerted on the acquisition environment. For example the acquisition process has undergone many changes which have contributed to the increase in undefinitized contracts.

The total Air Force undefinitized contract dollars on hand rose to $12.9 billion at the end of FY85. The increase resulted from a combination of factors. The impact of the many procurement reforms caused severe perturbations in the program execution process. This was reflected in the dramatic growth in acquisition lead time. In Air Force Logistics Command the average lead time grew from 180 days in FY83 to 276 days during FY85. During this period the DoD acquisition community implemented significant regulatory changes stemming from new acquisition legislation. The implementation of these changes coupled with a lag in obtaining additional manpower authorizations, and growing caution on the part of government and contractor personnel, contributed to the growing administrative lead times.

The total undefinitized dollars on hand was driven up by combined effects of acquisition reforms, growth in administrative lead times, lagging requirements initiation, and need to train an expanding, inexperienced work force.

The Air Force has identified and implemented new procedures to address the current Undefinitized Contractual Action (UCA) situation. These procedures successfully reduced UCA dollars on hand by $1.6 billion or 12.4 percent during the first quarter of FY86.

Question. The Committee understands that the Army has decreased its use of unpriced contracts, while the Air Force has increased them. Why is there a disparity between the Services?

Answer. Caution must be exercised when attempting to compare Undefinitized Contractual Actions (UCAs) between the Services. Such comparisons are difficult because such things as the types and complexities of systems, their stages of development and the logistics concepts used to support them all vary. The Air Force UCA backlog grew due to the combined effects of acquisition reforms, dramatic growth in administrative lead times, and a relatively inexperienced work force faced with assimilation of numerous changes to the acquisition process.

The Air Force began an extensive review of UCAs early in FY84. Following the review, procedures were instituted to reemphasize that UCAs are a viable contracting tool, to be limited to unique situations, requiring immediate action. As a result, in FY85 the percentage of total dollars obligated on UCAs dropped from 25.8 percent in FY84 to 16.8 percent in FY85. However, as of 30 Sep 85 the total UCA dollars on hand had risen to $12.9 billion. Due to this rise in on hand dollars, the Air Force took stringent steps to strengthen controls over UCA issuance and definitization. These actions included:

(1) Additional controls to limit UCAs to unique situations requiring immediate action to meet mission requirements.

(2) Requiring program managers/material managers to document specific operational impacts if the UCA was not issued.

(3) Raising approval levels required to issue a UCA.

(4) Requiring UCAs to be definitized within 180 days or before completion of 40 percent of the work and limiting obligation of Government funds to 50 percent of the "Not-to-Exceed".

(5) Prohibiting consolidation of non-urgent requirements with urgent requirements which mandate the use of a UCA.

To ensure our UCA objectives are achieved, the Air Force established goals to reduce the UCA dollars on hand by 32 percent by the end of FY86 and to limit new UCA issuance to 15 percent of total dollars obligated. Through the end of the 1st quarter FY86 Air Force UCA dollars on hand had been reduced from $12.9 billion to $11.3 billion or 12.4 percent and new issuances had been limited to 9.1 percent.

Question. We understand that OSD has ordered a 32% reduction in unpriced contracts in FY 1986. How will you implement this policy guidance?

Answer. The Air Force has established a goal to reduce on hand undefinitized contract dollars by 32% by the end of FY 1986. The Air Force Vice Chief of Staff (AF/CV), 10 Oct 85 letter, implemented stringent new Undefinitized Contractual Action (UCA) policies aimed at immediate and permanent reductions in UCA dollars. The Secretary of the Air Force, 4 Nov 85 memorandum, established the UCA reduction goal. Subsequently the Air Force Vice Chief of Staff implemented the reduction goal and established reporting requirements to monitor our progress. The results of these goals and the increased management attention being applied can be seen in issuance and on hand statistics. At the end of the first quarter FY86 on hand dollars had been reduced to $11.3B or 12.4% and new UCAs issuanced were limited to 9.1% of total dollars obligated.

GOLD PLATING

Question. In his statement to the Committee, Navy Secretary Lehman states that "gold plating is now under firm control". A key reason is the Secretary's policy that "no contract or engineering changes may be submitted for negotiation without the signature of the Commandant of the Marine Corps or the Chief of Naval Operations and the Secretary of the Navy." The CNO has told us that this eliminates 95 percent of all contract changes, which are usually very expensive because they are done sole-source. Dr. Cooper, why does the Air Force not have a similar policy?

Answer. The Air Force does have a policy called "Baselining" which has been implemented on many of our major programs. The baselining concept allows the program manager to manage the day-to-day operation of the acquisition but requires him to seek approval of major changes in either cost, schedule or technical performance. We have always had a policy of decentralizing our acquisition process to the lowest possible level, in this case, the program manager. The Air Force's current engineering change policy is to budget for all known Engineering Change Orders (ECOs) within the weapon system line (airframe, propulsion, avionics, . . .) and all unforecasted ECOs separate from the weapon system line. The unforecasted ECOs result from several possible causes, all of which cannot be anticipated. For example, some ECOs relate to safety of flight, and we must proceed quickly to prevent grounding of an aircraft fleet. In other instances, ECOs are generated when new manufacturing processes become available that can significantly reduce manufacturing costs without adversely impacting weapon system performance.

When an unforecasted ECO occurs, the Air Force requires the program manager to formally manage the changes within the boundaries of cost, schedule, performance, and supportability. The program manager must review, validate and approve/disapprove each change requiring contract modification through strict procedures at a configuration control board. He must consider the ECOs impact on mission, cost, schedule, and life cycle support as defined by the program baseline agreed to by the developing, using and supporting commands. In addition, each program manager periodically and systematically reviews each program with higher level management. For major programs, the reviews may reach the Secretary of the Air Force, and in cases such as the B-1B, the reviews are performed at the Secretary of the Defense level. This management philosophy of controlled decentralization allows the program manager a high degree of authority and responsibility without senior level involvement in every detailed decision.

Question. How many change order proposals have you reviewed since becoming Assistant Secretary of the Air Force? How do you even know whether or not you have the same problem as the Navy did?

Answer. Although I do not, as a matter of policy, routinely review contract change proposals, I do review significant changes to current programs in the context of the Secretarial Program reviews on major Air Force programs. The Air Force manages its acquisition and production programs consistent with the policy of controlled decentralization of responsibility and authority. The program manager is given the authority to manage the program within the boundaries of cost, schedule, performance, and supportability established by higher headquarters. The program manager is held accountable for his or her decisions in periodic and systematic program reviews by appropriate higher levels of management. These reviews include the status of proposed and active engineering change orders. Major programs are reviewed by the Air Force Secretariat in the regularly scheduled Secretarial Program Reviews. There are currently 24 Air Force acquisition programs that are reviewed in this manner. Special interest programs, such as the B-1B, are personally reviewed by the Secretary of the Air Force and the Secretary of Defense. We believe that this systematic management review process brings to bear the appropriate management focus and action on every Air Force program. We believe that this is an effective approach to the control of change order proposals.

Question. What oversight system does the Air Force have to prevent its program managers from issuing unnecessary contract engineering changes?

Answer. The Air Force has a policy called "Baselining" which has been implemented on many of our major programs. The baselining concept allows the program manager to manage the day-to-day operation of the acquisition but requires him to seek approval of major changes in either cost, schedule or technical performance. We have always had a policy of decentralizing our acquisition process to the lowest possible level, in this case, the program manager.

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COST CAPS

Question. Dr. Cooper, would you say in retrospect that the government and industry commitment to the $20.5 billion constant dollar ceiling on the B–1B bomber procurement program has been successful?

Answer. Yes, the discipline required to achieve this highly visible program goal has certainly contributed to the success of the B–1B program, which is currently funded at $19.6 billion (FY 1981 dollars).

Question. When will you make a similar "cost cap" commitment on the C–17 aircraft?

Answer. C–17 full scale development (Milestone II) was approved in Feb. 85. Preliminary design reviews were completed in late 1985 and airframe/air vehicle critical design reviews will begin later this year and continue through 1987. This process will finalize the design and form the basis for beginning fabrication and assembly of the test and production aircraft. The program will also undergo a detailed analysis and review to obtain approval for low rate production (Milestone IIIa) prior to obligating funds for initial procurement in Dec. 87. This would be the earliest point to make a commitment on the C-17 similar to what was done on the B-1B.

One must remember that the agreement on B-1B costs was made in Jan. 82 as the program was being restarted. Four test aircraft were available and some 2,000 hours of flight testing had already been accomplished. We support a commitment on the C-17 and believe it would help stabilize the program from both a cost and schedule standpoint. We will continue to examine this subject and will make a commitment at the earliest possible date.

Question. Do you plan to "freeze" engineering changes on the C-17 in an identical manner to the B-1B program?

Answer. C-17 engineering changes will be managed and funded similar to other Air Force acquisition programs including the B-1B. Engineering changes were not frozen in the B-1B program. Approximately six percent of recurring flyaway costs were budgeted for engineering changes and have been used over the course of the program. What was somewhat unique in the B-1B was that major changes could not be approved by the program manager through the normal configuration control board (CCB) process.

C-17 engineering changes are budgeted at 3.4 percent of recurring flyaway costs and will be managed in the normal CCB process. There is no indication at this time that major changes will require special approval as was done on the B-1B.

Question. Do you think that Congress should require the President to certify total C-17 program costs as was done for the B-1B?

Answer. We believe reaching an agreement with Congress on C-17 costs similar to what was done on the B-1B would be beneficial for the program. A realistic date to certify C-17 costs to Congress would be following the low rate production decision and completion of critical design reviews in late 1987. This would still be far earlier than done on B-1 which had completed some 2,000 flight test hours when certification was made to Congress. C-17 will still be over two years from starting flight testing. We will continue to examine this subject and make a commitment at the earliest possible date.

ACQUISITION POLICY

Question. The Navy has recenty had great success in increasing competition and lowering costs of its weapon systems. In November 1985, Secretary Lehman issued new acquisition policies requiring:

Each R&D program to begin with a minimum of 2 contractor teams performing concurrent but separate development up to FSED (full scale engineering development);

risk reduction efforts prior to FSED;

fixed price R&D contracts after Milestone II (FSED);

first production apportioned between 2 contractors;

contractors supply all production tooling and test equipment (except acceptance test equipment); and

block upgrades only for engineering changes.

Dr. Cooper, what do you think of Secretary Lehman's acquisition policy initiatives? Are you planning similar initiatives? How do Air Force policies on tooling costs compare to the Navy? If the Air Force follows different policies, won't this undermine Secretary Lehman?

Answer. The Air Force has long been the leader in acquisition improvements. For example, we are the only Service with established career paths for both military and civilian acquisition personnel. Our officers can begin as Second Lieutenants and go all the way to General Officer without ever leaving the acquisition career field. And, we've had this career management system for over twenty years. We've been using "should cost" teams to determine weapons systems costs for over fifteen years. Past performance has been used as a source selection criteria for at least eight years. We've been baselining our programs to help control both cost and requirements growth for over seven years. We've been emphasizing fixed priced contracts for over seven years. Last year over 85 percent of our dollars were contracted through fixed price contracts—the best in DoD. And, less than 13 percent of our contracts were noncompetitive, again the best in DoD. We developed the concept of multiyear procurements which has a proven track record of saving billions of dollars. We developed the concept of "leader-follower" to increase competition on complex weapons systems. Even the Defense System Management College, the premier institution for educating DoD program managers, evolved from an Air Force operated school. As you can see, we have a long and proud history of improving the acquisition process and transferring our lessons learned to others. As we develop new ideas and test them to ensure they really work, we'll continue to institutionalize them and provide our experience to others.

AIR NATIONAL GUARD TRAINING AIRCRAFT

Question. Both Appropriations Committees directed the Air Force to phase out obsolete T-33 aircraft assigned to the Air National Guard and replace them with 45 T-39 aircraft being retired, to be accomplished by the end of fiscal year 1986, and within existing O&M appropriations to the Air National Guard. Cost savings are estimated to be $30 million over 10 years. Yet, the Air Force's "FY 1987 Base Realignment Announcement" indicates that: (1) obsolete and dangerous T-33's will not be phased out for three more years, and (2) the Air Force intends to contract for a replacement aircraft rather than use T-39's which otherwise will be scrapped. Dr. Cooper, why has the Air Force ignored both Appropriations Committee's instructions on this issue? Have you personally examined the merits of the proposal reflected in your budget, which is contrary to congressional intent?

Answer. The Air Force has not ignored the Appropriations Committee's instructions on this issue. The Conference Report (Rept 99-450) states that the House and Senate agreed that the Air Force must retire the ANG T-33 aircraft in fiscal year 1986 and replace them with 45 T-39 aircraft. The conferees clarified that this action is intended to provide an interim capability until such time tha the Air Force budgets for and deploys a permanent replacemen aircraft that fully meets the requirements of both the Active and Guard forces for electronic countermeasures training. As part of this interim measure, the conferees directed the Air Force to phase out T-33s in the Active inventory as soon as possible, and either replace them with T-39 aircraft or provide the Guard with sufficient T-39s to accomplish the mission for the Total Force.

The Air Force began phasing out Active and Guard T-33 aircraft in fiscal year 1986 and will complete their retirement in the first quarter of fiscal year 1989. Retiring all T-33s by the end of fiscal year 1986 would create a training vacuum because we could not fulfill the ANG or Active requirements by refurbishing ECM fitted T-39s in time to meet the requirement.

I have reviewed the report on T-39 aircraft provided to Congress on February 28, 1986. The T-39 is not cost effective. It is not an operationally viable approach to providing the electronic countermeasures training to our forces. The report identifies recurring corrosion problems, wing cracks, questionable integrity of other components and costly logistics support. It further concludes the most cost effective method of providing air defense target training is with a contracted capability which we intend to pursue. A fully operational capability will exist concurrent with the phase-out of the T-33 aircraft. This approach agrees with congressional intent "to deploy a permanent replacement aircraft that fully meets the requirements of both the Active and Guard forces for electronic countermeasures training."

Question. How much is budgeted in each fiscal year of your five year defense plan for the contract approach?

Answer. The Five Year Defense Program (FYDP) is an expression of fiscal estimates based on projected force levels, procurement initiatives and overall policy direction at a point in time. Each year, the Department conducts an extensive program/budget review, resulting in a wide range of program changes and financial estimates. The FYDP beyond the budget year is an internal record of proposed program and resource requirements. It includes programs that will be deleted, deferred and repriced. It also includes candidate programs that may be incorporated during subsequent reviews. Importantly, it includes on narrative explanation and may, in fact, not agree with the President's outyear budget projections. Such data could be misinterpreted, thereby consuming many unproductive hours on the part of both our staffs, explaining differences between updates and subsequent budget request. For these reasons we have not provided the outyear data requested. The funding profile intended for the T-33 contract replacement for FY86 and FY87 is as follows:

	Millions
Appropriation 3400:	
Fiscal year 1986	0
Fiscal year 1987	10.3

Question. Does the funding in your five year defense plan provide service to the Air National Guard equal to 45 T-39 aircraft as directed by Congress?

Answer. Yes. If service is defined as target flying hours, the approach in our five year defense plan (FYDP) provides more service for the given Operations and Maintenance (O&M) funding than 45

T-39s would. For example, FY 86 O&M funding provides 11,000 T-33 flying hours for Air National Guard users. Air Force analysis indicates that this O&M funding would generate only 6500 T-39 flying hours. Our approach through the FYDP provides a mix of T-33 and contract flying hours that equals the target-dedicated portion of the previous all T-33 program. T-33 hours decrease due to aircraft phaseout and contract hours increase in the mix until the program will eventually be all contract.

Question. Does it even provide service to the Air National Guard equal to the current obsolete T-33 fleet?

Answer. Our T-33/contract mix through the FYDP always provides target training capability equivalent to the current T-33 target program. If we further define service as quality of training, then our contract approach increases quality of training as the contract builds. Contract targets will be equipped with reprogrammable, state-of-the-art ECM equipment to offer more realistic ECM training than the T-33 provides.

Question. What percent of the current inventory of T-33 aircraft belong to the Air National Guard and what percent to the active forces?

Answer. Of the first quarter FY86 inventory of 141 T-33 aircraft, 41 (29%) belong to the Air Guard and 100 (71%) belong to the active force.

Question. How does this compare to the percentage share of funding for the contract alternative in your five year defense plan?

Answer. It is the Air Force intention to fund target sorties so that the Air National Guard receives the same share it receives under the present program.

Question. What study has been made to determine the amount of service needed to replace the entire T-33 fleet, whether active or Guard?

Answer. An Air Staff working group in 1985 investigated the target sortie requirements for air defense forces and evaluated several options to fill those requirements. Retention of the T-33, a reconfigured T-39, and a contract alternative were three of the options. More recently, key workers of the tactical air forces met to finalize a Statement of Work which specifies the conditions of a contract to replace the T-33 in the faker role.

AIR DEFENSE AIRCRAFT COMPETITION

Question. The Congress provided $200 million in FY 1986 to initiate a competition among F-16, F-20, and other tactical fighter aircraft for the continental air defense mission. The Air Force has been planning the competition since last spring. What has caused the delay in sending the formal RFP (Request for Proposals) to industry?

Answer. There has been no delay in releasing the RFP. The RFP will be released on 24 March 1986. This release date results from an aggressive schedule tailored to active an expeditious yet competent source selection decision.

Question. Why is the Air Force not holding the competition for a multi-mission aircraft, rather than restricting it to only air defense missionized aircraft?

Answer. The average age of the air defense forces is approximately 20 years. The capabilities of the aging air defense forces are limited against a modernized Soviet threat. Additionally, a competition in the air defense mission area will allow for the widest variety of aircraft to compete since the aircraft will compete in a single mission area as opposed to the more complex multi-mission area. This competition does not preclude the possibility of future competition in other mission areas.

Question. What will be the basis of the competition and how will it be measured or evaluated?

Answer. The Air Defense Competition will be "full and open." Areas of evaluation will include mission effectiveness, technical, life cycle cost and logistics and management. These evaluation factors will provide the basis for the source selection decision.

Question. What is the schedule for phasing the competition winner's aircraft into the Air Defense forces?

Answer. A national beddown plan is presently being developed. The beddown schedule however, is dependent on the aircraft selected since aircraft manufacturers' production schedules vary widely. For this reason it is unlikely that we will have a firm beddown plan until after contract award.

Question. If the F-20, is selected, how will the current fighter engine competition be affected?

Answer. The F-20 engine is different from either engine in the Alternate Fighter Engine Competition. Should the F-20 win the Air Defense Competition the Alternate Fighter Engine Competition would not be affected.

FIGHTER AIRCRAFT COMPETITION

Question. The competition is focused on aircraft to compete with the F-16. Yet, the Air Force now plans to buy more F-16's during the next five fiscal years than was projected in last year's budget (i.e., before there even was a competition). The Air Force considers the "air defense competition" for 270 aircraft in the next five fiscal years to be a separate initiative from procurement of F-16 aircraft. General Randolph, the Committee is pleased that you have budgeted for the "air defense competition" as required by Congress last year. However, it appears there is no competition within F-16 program itself, since the "air defense competition" is to be conducted outside of the F-16 program. What are your plans to introduce competition in the F-16 program for missions other than "continental air defense?"

Answer. The F-16 multirole fighter continues to prove itself as an outstanding, low cost competitor in both the air-to-air and air-to-ground environment, recently demonstrating its superiority in visual ground attack at "Gunsmoke '85," held 6 through 19 October 1985, at Nellis AFB, Nevada. Out of 17 teams participating in the USAF's biennial worldwide fighter gunnery competition, the six teams flying the F-16 finished first, second, fourth, fifth, sixth and seventh. The 419th TFW from Hill AFB, Utah, scored a record 9,431.5 points out of a possible 10,000. This outstanding performance is a credit to the competitive Light Weight Fighter Program which gave birth to this superb aircraft. As the F-16 program has matured, strong competition has already been built into both the Government Furnished Equipment (GFE) and the Contractor Furnished Equipment (CFE) buys to ensure the most airplane for the dollar. In fact, 77 percent of the GFE is competed, and 85 percent of the CFE is competed. In total, 63 percent of the F-16 is competed. The F-16 has achieved the highest levels of performance, reliability and maintain-ability, and safety ever demonstrated in a single-engine fighter. No further competitive programs, based on a missionized segment of the multiyear procurement core, would benefit the taxpayer at this time. However, the Air Force continuously matches its weapon systems to meet mission requirements, and will introduce further competition where cost savings can be achieved while meeting Air Force requirements.

Question. In fiscal year 1985, Congress approved a F-16 multiyear contract proposal covering fiscal years 1986-1989. How many F-16's will be "locked-up" under that contract?

Answer. Terms of the F-16 Multiyear Procurement II, FY 1986 through FY 1989, specify the total minimum procurement of 720 F-16 C/D aircraft at the rate of 180 aircraft per year.

Question. Given the constraints of the F-16 muliyear contract, when is the earliest fiscal year in which the F-16 could be competed for missions other than "continental air defense?"

Answer. The first year the F-16 could be competed for missions other than "continental air defense" is FY 1990.

Question. What other missions are being examined by the Air Force to introduce competition into the F-16 program?

Answer. The Air Force has considered the entire gamut of fighter aircraft missions to introduce competition into the F-16 program. The Air Defense Aircraft Competition has been the most promising candidate. However, as the F-16 program has matured, strong competition has been built into both the Government Furnished Equipment (GFE) and the Contractor Furnished Equipment (CFE) buys to ensure the most airplane for the dollar. In fact, 77 percent of the GFE is competed, and 85 percent of the CFE is compкартpleted. In total, 63 percent of the F-16 is already competed. No further competitive programs, based on a missionized segment of the multiyear procurement core through FY 1989, would be beneficial to the taxpayer at this time. However, the Air Force continuously manages mission requirements with its weapon systems, and will introduce further competition where cost savings can be achieved while meeting Air Force requirements.

Question. While the Advanced Technology Fighter is in production, will F-16 production continue?

Answer. The Air Force is planning procurement of the F-16 aircraft through FY 1994, but with each new Five Year Defense Plan, the Air Force reevaluates the need for extended procurement of the F-16. The Advanced Tactical Fighter will begin low rate initial production in FY 1992.

Question. What other fighter aircraft will be procured or receive major modifications during the ATF production run?

Answer. During the early years of the ATF production run, the F-15E and F-16C/D will be procured and major modifications will be accomplished on the F-4/RF-4, F-16, F-15, and F/FB-111.

Less Capable F-16 Aircraft

Question. The budget proposes annual procurement of 120 F-16 aircraft that are less capable, but also less expensive than the fully capable F-16C model. The less capable aircraft is designated the "F-16CM" (which means a modified F-16C). This is a direct result of the unsolicited proposal by General Dynamics in response to the F-20 proposals by Northrop. General Randolph, the Air Force proposes buying 600 of the less capable/less expensive "F-16CM" aircraft in the next five fiscal years. Can these aircraft be competed with the F-20 or other aircraft?

Answer. Six-hundred F-16C aircraft referred to as the "F-16CM" in this information request are being procured from General Dynamics (GD) from FY 1987 through FY 1991. The first 360 of these aircraft are part of the Multiyear Procurement II (MYP) which will include a variation in quantity option for an annual buy of 36 additional aircraft above the MYP core of 180 per year. Competition has been built into both the Government Furnished Equipment (GFE) and the Contractor Furnished Equipment (CFE) segments of this F-16 MYP to ensure the most airplane for the dollar. Seventy-seven percent of the GFE is competed, and 85 percent of the CFE is competed. In total, 63 percent of the F-16 is already competed. It would not benefit the Air Force or taxpayer to restructure another competition for these first 360 F-16Cs. Moreover, the terms of the Multiyear Procurement II would not allow it. The remaining 240 aircraft in FY 1990 and FY 1991 could be competed with the F-20 or other aircraft. However, the Air Force plans the procurement of these aircraft using annual procurement contracts awarded to GD. These aircraft will continue to benefit from the GD-USAF component competition structure already in place. Though the Air Force is continuously studying follow-on fighter procurements for 1990 and beyond, we do not believe there would be an overall benefit to the taxpayer from a recompetition among aerospace industry fighter candidates for these 240 aircraft beginning in FY 1990.

Question. How many of the "F-16CM" aircraft are planned to be procured sole-source from General Dynamics under the new multiyear contract? Will the F-16 multiyear contract allow all 600 of the less capable aircraft to be competed?

Answer. Six-hundred F-16C aircraft referred to as the "F-16CM" in this information request are being procured from General Dynamics (GD) from FY 1987 through FY 1991. The first 360 of these aircraft are part of the Multiyear Procurement II (MYP) which will include a Variation in Quantity option for an annual buy of 36 additional aircraft above the MYP core of 180 per year. Competition has been built into both the Government Furnished Equipment (GFE) and the Contractor Furnished Equipment (CFE) segments of this F-16 MYP to ensure the most airplane for the dollar. Seventy-seven percent of the GFE is competed, and 85 percent of the CFE is competed. In total, 63 percent of the F-16 is already competed. It would not benefit the Air Force or taxpayer to restructure another competition for these first 360 F-16Cs. Moreover, the terms of the Multiyear Procurement II would not allow it. The remaining 240 aircraft in FY 1990 and FY 1991 could be competed. However, the Air Force plans the procurement of these aircraft using annual procurement contracts awarded to GD. These aircraft will continue to benefit from the GD-USAF component competition structure already in place. Though the Air Force is continuously studying follow-on fighter procurements for FY 1990 and beyond, we do not believe there would be an overall benefit to the taxpayer from a recompetition among aerospace industry fighter candidates for these 240 aircraft beginning in FY 1990.

Question. A June, 1985 Air Force audit discusses opportunities to reduce the costs of AIM-9 missile launchers used on F-16 aircraft by $82 million. How much is budgeted by line item in each fiscal years 1984 to 1988 for procurement of LAU-129 launchers? What impact did the recent audit have on these requirements?

Answer. The following is the funding for procurement of the LAU-129 launcher (TY$ in millions):

	Fiscal year—				
	1984	1985	1986	1987	1988
Recurring	13.5	34.0	28.8	24.8	19.3
Nonrecurring	3.1	0	2.9	0	0
Peculiar ground support equipment	0	2.4	0	1.3	1.4
Training equipment	0	.8	0	1.3	1.4
Data	0	1.0	0	.8	.9
Subtotal (Gross Weapon System)	16.6	38.2	31.7	28.2	23.0
Adv buy (CY)	0	3.5	1.5	2.9	3.2
Adv buy (PY)	0	0	−3.5	−1.5	−2.9
Total requirement	16.6	41.7	29.7	29.6	23.3

Regarding the Air Force audit, the agency's recommendations did not affect LAU-129 launcher procurement. The LAU-129 launcher is a multiple rail launcher that is AMRAAM and AIM-9 compatible. They did recommend reduction of the AIM-9 missile launcher, designated the 16S200, procurement. The Air Force has reduced AIM-9 launcher procurement in the Multiyear Procurement II by 1320 units. We plan to delete 800 more AIM-9 launchers as the contract for the second lot of LAU-129 launchers is definitized.

B-1B BOMBER MODIFICATIONS

Question. Dr. Cooper, your budget shows that the Air Force plans to spend $176.4 million in the next few years to modify B-1B bombers after they are delivered to the Air Force. Please explain the purpose of these modifications. Provide details for the record. Why were these capabilities not addressed while the aircraft were being built?

Answer. The Air Force B-1B modification budget reflects $96.4M in FY 87 and $131.5M in FY 88 to achieve a common configuration for the B-1B fleet. These retrofit budget requests are consistent with Congressional direction that "no B-1B production funds in any fiscal year are to be used for retrofit modifications." Only the accelerated pace from startup to early aircraft deliveries prevented incorporation of these "commonality mods" in the production line from the beginning.

Question. Are the costs for these modifications considered to be within the Presidential $20.5 billion constant dollar B-1B cost baseline?

Answer. No. Congress denied the Air Force the authority to use baseline FY 1986 production monies to procure kits for these "commonality modifications." Congress directed the Air Force to budget for these retrofit efforts as modifications.

Question. What is your acquisition strategy and schedule for these modifications?

Answer. The commonality modifications all represent capabilities engineered and incorporated in the production line by Rockwell International. Therefore, there is no viable alternative than to continue with Rockwell on a sole source basis to build these aircraft kits.

Question. Has the Air Force identified a role for the B-1B bomber against relocatable targets? Is this being considered?

Answer. The Air Force is currently studying the difficult task of attacking strategic relocatable targets (SRTs). SRTs present a difficult and complex targeting problem and all US strategic weapon systems are being considered for this role. The B-1B will be the primary penetrating bomber in the late 1980s and early 1990s. As the capability evolves for the B-1B to search, locate, and destroy SRTs, it wil be employed in this role.

Question. A recent trade press article (Defense Electronics, March, 1986, p.18) states that as the bomber's target tasking became defined, potential growth options such as improved connectivity, additional sensors, and next generation ECM "would be exercised as needed". The article speculates that 1988 would be "a prime year" for commencing full-scale development of B-1B modifications. Is this article essentially accurate? When will the B-1B bomber's "target tasking" be defined?

Answer. The Air Force constantly analyzes potential ways to improve force effectiveness in response to the Soviet threat. Consideration of future configuration changes to enhance capability is part of this ongoing effort.

Question. What future changes to the B-1B bomber's configuration are currently being contemplated by the Air Force? Do you have any studies currently underway or planned to either clarify the aircraft's target tasking or to enhance the aircraft's capability through future configuration changes?

Answer. The Air Force constantly analyzes potential ways to improve/maintain force effectiveness in response to the expansion and modernization of the Soviet threat. Consideration of changes to the B-1B bomber's configuration is part of this ongoing effort. Although funds for such changes are not now programmed in the Air Force's Five Year Defense Plan, some candidates for future product improvement are listed below:

a. MIL-STD-1760 Aircraft/Store Electrical Standard Interface to facilitate compatibility with future weapons. Would enhance operational flexibility.

b. Forward Looking Infrared System (FLIR). Spare and weight provisions exist for a FLIR should future missions indicate a requirement for this sensor capability.

c. Added Electronic Countermeasures. Buried waveguide provisions are included for incorporation or advanced countermeasures when they are needed in the future.

Question. Has the Strategic Air Command identified any FY 88 POM initiatives that would propose future changes to the B-1B bomber's configuration and/or capability.

Answer. Individual MAJCOM POM initiatives and recommendations undergo extensive programmatic and budget review prior to becoming a part of the official Service POM. As such, releasing information on any MAJCOM POM initiative is premature and inappropriate during the POM development process.

B-52 RETIREMENT

Question. The Air Force currently plans to retire cruise missile capable B-52G bombers as the Advanced Technology Bomber is fielded, sometime in the 1990s. A March, 1986 Congressional Budget Office report to the Budget Committee shows a $4.8 billion five year savings if these older B-52Gs were phased out by 1988 as the B-1B bomber is fielded. That would leave the newer model B-52s and the B-1Bs to do the cruise missile role. Dr. Cooper, what are Air Force plans to retire B-52 bombers? What risks are involved in retiring old model B-52Gs earlier than planned?

Answer. The Air Force plans to retire the older ALCM B-52Gs when the ATB is fielded. This allows a smooth transition of roles for the B-52Hs from a shoot-and-penetrate to standoff role, and for the B-1Bs from a penetrate to a shoot-and-penetrate role. If the ALCM B-52Gs were retired earlier than scheduled, the balance between cruise missile carriers and penetrating bombers would be changed with a corresponding loss in weapon delivery capability and target coverage. Further, the Air Force plans to dedicate non-ALCM B-52Gs to the conventional role in the late 1980s. Currently, the Air Force does not have a dedicated conventional heavy bomber force: the non-ALCM B-52Gs are being modified to fulfill that role into the 1990s. Thus, B-52 retirements would result in an overall loss in capability across the spectrum of conflict.

Question. CBO states that having more than 120 bombers carrying air launched cruise missiles would require compensatory reductions in multiple warhead missiles under SALT II limits. If older B-52Gs were retired early, could all B-52Hs and some B-1Bs be modified that would otherwise be required under SALT II?

Answer. 98 B-52Gs are presently modified for ALCM carriage. If retired early, then all 96 B-52Hs plus 24 B-1Bs could be modified for ALCM carriage before reaching the implied limit of 120 ALCM Heavy Bombers specified in SALT II. The Air Force plans to use all 100 B-1Bs as primary penetrating bombers in the near term. Extensive testing remains before the B-1B will be certified as a cruise missile carrier. It should be noted that the Air Force currently has no plans to retire the B-52G ALCM bombers early.

Question. The Air Force will have a tanker aircraft refueling shortfall well into the 1990s. What effect would early retirement of 8 engine, gas-guzzling B-52Gs have on the tanker shortfall?

Answer. ———.

C-5B AIRCRAFT

Question. The Administration and Congress have agreed to a 50 C-5B aircraft procurement. Fiscal year 1987 is the last production funding. What is the status of the unsolicited proposal from C-5B contractor, received by the Air Force last year, to extend C-5B production by another 12 aircraft? Have you recently received a new unsolicited proposal from the contractor?

Answer. Lockheed's 17 July 1985 offer for 24 additional C-5B aircraft expired in November 1985; however, on 21 January 1986, Lockheed extended their proposal until November 1986. On 4 February 1986, the Air Force notified Lockheed that we have no requirement for additional C-5B aircraft beyond the currently planned 50 aircraft procurement.

Question. How do the costs of the most recent contractor proposal compare to those originally used by the Air Force to justify future procurement of C-17s rather than more C-5Bs?

Answer. C-5B acquisition costs in the most recent contractor proposal are somewhat lower than originally used by the Air Force. An update (done in FY 85 dollars) of the earlier analysis (1983 Airlift Master Plan) based on the current contractor proposal reduced C-5B acquisition costs $2.8 billion from the original estimate for 156 primary (181 total C-5Bs) aircraft. However, updated factors for operating and support costs increased the C-5B alternative by approximately the same amount. The most recent contractor proposal does not change our conclusion that C-17 is more cost effective over the life cycle of the system and is still approximately $16 billion cheaper in constant dollars.

Question. Your budget shows an excess of $147.8 million in the FY 1985 C-5B procurement program. What are the sources of this excess, and what proposed uses have been identified to date for these funds?

Answer. The $147.8M in FY 1985 was generated by $45.8M in adjusted program requirements and $102.0M in Economic Price Adjustments. These Economic Price Adjustments were subsequently offset by reductions in the FY 1986 appropriation.

$42.3M in program adjustments resulted from reduced program ECO and reduced training contract costs. The Economic Price Adjustment of $102.0M was identified as the FY 1985 portion of the December 1984 Economic Price Adjustment. These funds and an additional $3.5M were withheld by OSD. Subsequently, the FY 1986 appropriation was reduced by $102.0M due to FY 1985 savings. As a result, OSD identified the withheld $105.5M for reprogramming. Subsequent reprioritization of Department of Defense priorities returned these funds to the C-5B program.

Because of FY 1986 C-5B funding reductions, we require $22.0M from the $147.8M for the final C-5B simulator. Additionally, $13.1M will be used to pay the Gramm-Rudman-Hollings bill. $6.7M has been reprogrammed and the balance of $106.1M has been identified for other high priority Air Force reprogramming.

Question. The Committee understands that the Air Force is negotiating with the contractor to make EPA clause (inflation) adjustments to the current contract. How much is anticipated to "fall-out" in each fiscal year 1984 to 1987? When will the exact amounts be known?

Answer. The Air Force is negotiating new C-5B contract values for FY 1984 through FY 1986. Estimates of these reductions by fiscal year follow:

Fiscal year:	*Millions*
1984	$20
1985	60
1986	125

We will propose any resultant excess FY 1984 and FY 1985 budget authority for rescission once the final values are known. We expect negotiations to be complete by May 1986. The FY 1986 reduction cannot be rescinded since these funds are required to execute the directed FY 1986 program within existing funding. In accordance with the contract, final EPA adjustments based on actual inflation data will continue to be made at six-month intervals.

C-17

Question. The Air Force is requesting $217 million in FY 1987 for the C-17 aircraft. This is the first year of production funding. C-17 will cost about $36 billion for 210 aircraft, or $171 million per plane. General Randolph, how will the FY 1987 production funds be used? What is the impact of deferring them for one year?

Answer. The FY 1987 production funds will be used to fund aircraft long lead items ($35M) for the planned procurement of two aircraft in FY 1988 and production start up costs ($182.3M). The $217.3M is a contract requirement to be awarded in the first quarter of FY 1987.

Deferring the full $217.3 million in FY 1987 procurement funds will delay production start for one year. The production options would have to be renegotiated, the RDT&E schedule would have to be restructured because of the delayed start in fabrication/assembly of the three test articles, and the development contract would exceed the 10 year statutory limit and would require a Congresional waiver. Additionally, first flight and initial operational capability would be delayed one year to FY 1991 and FY 1993 respectively. Finally, total program cost would increase approximately $1.25 billion.

If just the $35 million in aircraft long lead was delayed, fabrication and assembly could be held to the current schedule and delivery of the flight test article would remain in FY 90. The impact stated above would be the same except the RDT&E schedule and first flight date would not change. The RDT&E test program would, however, be extended nearly a year. Total program cost would increase approximately $1.1 billion with this alternative ($150M less than deferring the full $217.3M).

Question. Will the addition of 210 C-17 aircraft solve the strategic airlift shortfall?

Answer. The airlift "shortfall," as currently identified by many, is the difference between today's capability and the widely recognized strategic airlift capability goal of 66 million-ton-miles per day (MTM/D). The 66 MTM/D figure is a fiscally constrained, minimum goal established as a result of the Congressionally Mandated

Mobility Study (CMMS), and is representative of a compromise between the absolute mobility requirement and what we can reasonably afford. Thus, achieving our airlift goal is not synonymous with satisfying the total airlift shortfall. With that as prologue, yes, the C-17 will provide the final increment of strategic airlift capability needed to reach the 66 MTM/D goal. Perhaps more importantly, though, the C-17 will modernize the airlift fleet, permit retirement of older C-141 and C-130 aircraft as they reach the end of their useful service lives, and provide unprecedented intratheater mobility . . . all for the lowest cost of any comparable airlift option.

Question. Has the Tactical airlift shortfall been defined? How will C-17 help?

Answer. The Worldwide Intratheater Mobility Study (WIMS) is well underway with a charter to quantify the total intratheater movement requirement generated under the Defense Guidance (DG) scenario. This, of course, includes the tactical airlift requirement. The WIMS is scheduled for completion this summer. With two of three theaters nearing completion, preliminary results indicate a significant shortfall in general intratheater airlift capability with a particular emphasis on the requirement to move outsize equipment. The C-17, with direct delivery capability as well as the flexibility to perform the full range of tactical airlift missions, will make a significant contribution to solving the intratheater problem. Specifically, the C-17's greater capacity, higher speed, and longer range will augment the existing C-130 fleet, filling mission needs for which the C-130s are inefficient or incapable. Further, the C-17 will offer commanders a first-ever capability to move outsize equipment (including the Army's heavy firepower) in the tactical environment.

Question. What are Air Force plans for retiring C-130s? Will retirement of C-130s offset the additional tactical lift provided by C-17s, leaving us still with a tactical lift shortfall?

Answer. The Air Force plans to retire all 110 C-130A aircraft by the mid-1990s. By that time, these aircraft will have reached an average age in excess of 35 years and will have reached their wing-life expectancy of 18,000 hours. Mandatory modifications to extend the use of these aircraft are cost prohibitive, considering the airlift contribution provided. Regarding tactical airlift capability, it is anticipated the C-17 will more than offset the intratheater tonnage capacity lost as these older C-130s retire. In fact, with the C-17 on board, intratheater airlift will enjoy a significant net increase over today's capability, including for the first time, an intratheater outsize capability.

Question. What C-130 follow-on efforts are being planned or contemplated by the Air Force?

Answer. As C-130 A-B and early E models reach their service life and retire, the Air Force plans to have procured enough C-17s to offset this lost capability. Unlike C-130s, the C-17s will be able to carry "outsize" cargo and provide both an intra and intertheater airlift capability. However, the C-17 will not replace the C-130; it will simply complement the remaining C-130 fleet. After the turn of the century, the Air Force must examine possible alternatives to the C-130s as they reach the end of their useful life. On 5 Feb 86, Air Force Systems Command awarded Lockheed, McDonnell Douglas, and Boeing a study contract to examine future advanced transport technology. The study will assist the Air Force in evaluating tactical airlift requirements and potential aircraft technologies to meet those requirements.

Question. What are Air Force plans for retiring C-141 aircraft and for transferring them to the Reserves? Will retirement of C-141s offset the additional lift provided by C-17s, leaving us still with a strategic lift shortfall?

Answer. The Air Force's Airlift Total Force Plan contains three distinct initiatives for managing the C-141 fleet. First, 80 aircraft will be transferred to the Air Reserve Forces (ARF) between FY 86 and FY 97, with C-141s going to eight Reserve and two Air National Guard Units. In addition, the ARF C-141s will be operated at a utilization rate commensurate with a manning level of 2 crews per aircraft (vice the current level of 4 crews per aircraft). Next, 100 C-141s in the active force will begin reducing their manning level from 4 crews to 2 crews in FY 93, completing the reduction by FY 99. Finally, 54 of the oldest C-141s will be retired between FY 96 and FY 99. These management actions will accomplish three important goals: they will provide a smooth force structure environment for accommodation of the C-17 fleet; they will accomplish the objectives of transferring more strategic airlift to the ARF and modernizing the ARF airlift force; they will extend the useful life of the C-141 force to maximize its contribution to our overall strategic airlift capability. The Airlift Total Force Plan, in conjunction with the Airlift Master Plan, was designed to smoothly build to the 66 MTM/D goal.

Question. What consideration is being given to new C-141 service life extension modification programs.

Answer. The Air Force is continuing to develop the necessary modifications to ensure that the C-141 maintains its structural and systems integrity consistent with the operational goals contained within the Airlift Master Plan. The on-going fatigue life extension program will give the Air Force an effective airlifter with no mission limitations because of structural/systems defects. As we gain further knowledge of potential defects from the Aircraft Structural Integrity Program (ASIP), we will continue to program modifications to solve possible problems.

HH-60 HELICOPTER

Question. Congress appropriated $55 million for procurement of 3 HH-60 helicopters in fiscal year 1986 that are to be used for the search and rescue mission. The Air Force proposes to terminate the program due to fiscal constraints. General Randolph, the FY 86 Conference Report was clear that Congress expects the Air Force to get on with a search and rescue helicopter program that is long overdue. Why has the Air Force chosen not to comply?

Answer. We are faced with many competing priorities in a severely constrained budget and have chosen to continue use of current rescue assets until such time as we can afford to modernize the combat rescue force.

Question. How old are the helicopters that are currently being used for this mission?

Answer. Age of Search and Rescue Helicopter (MAC)

Type	1st year of acquisition	Last year of acquisition
UH-1N	1968	1969
CH-3E	1963	1965
HH-3E	1964	1969
HH-53E	1968	1969
UH-60A	1981	1982
HH-1H	1970	1970

Question. What were the Air Force's experiences in Vietnam that prompted you to propose an HH-60 replacement helicopter initiative in the first place?

Answer. In the Southeast Asia (SEA) conflict, combat rescue evolved into a highly developed form. The commander of the 7th Air Force had responsibility for the rescue mission. Operational control was exercised by the 3rd Aerospace Rescue and Recovery Group (3 ARRG) at Nakhom Phanom, Thailand. The 3 ARRG operated the Rescue Control Center (RCC) and further delegated control within specified zones.

Initial reports of downed aircrews in SEA generally came from one of four sources: a distress call from the downed crew, a report from the Foward Air Controller (FAC), a report from the wingman of the downed pilot, and/or a report from some other aircraft monitoring emergency frequencies. This information was relayed to the RCC, which would make a determination whether the chance of a safe and successful rescue was sufficient to warrant an attempt. If so, the RCC would assign forces. It is important to note that rescue attempts were only initiated in daylight under good weather conditions because rescue aircraft lacked the capability to navigate safely and accurately otherwise.

A typical USAF Search and Rescue task force assigned to a particular rescue mission in SEA would consist of the primary rescue helicopter (H-43 in the early years of SEA, followed by its replacements, the H-3/H-53), plus a backup, a contingent of fire support aircraft (A-1 or A-7) and an HC-130. Generally it was necessary to establish the survivor's location more precisely, either visually or by taking Direction Finding (DF) fixed on his radio. The survivor would be authenticated by voice. To further reduce the risk to the helicopters, the fire support aircraft would suppress enemy activity in the area. Immediately afterwards, the rescue aircraft would approach at low altitude, guided by smoke released by the survivor or by voice vectoring. After the pickup, the fire support aircraft would escort the rescue helicopter out of the area.

The initial rescue helicopter used in SEA was the H-43 "Pedro." Designed for local base rescue, it had significant limitations. One of these included a maximum range of approximately eighty miles. To prosecute a rescue mission in excess of eighty miles, it had to land at forward fuel locations and be refueld from fifty-five gallon drums. Recognizing its shortfalls, the Air Force replaced the H-43 with the H-3 "Jolly Green" and later with the H-53. These helicopters were not designed for the rescue mission. The H-3 (derived from the Navy SH-3) was vulnerable to hostile threats, took too long to reach the rescue area, and normal mission required operation at above design gross weight which prevented normal takeoffs. Prior to initiating a hoist recovery, fuel dumping was required. The H-53 provided speed and power improvements but it lacked survivability and maintainability. Neither of these aircraft were capable of night or adverse weather operations. As a result, the downed crew member waited until dawn or for the weather to improve for recovery.

Missions in all but the most permissive environments required a search and rescue task force (SARTF). The war often "came to a halt" while up to fifty aircraft were diverted from other assigned missions. Even with these limitations, over 4,100 lives were saved in SEA, of which 2,700 were combat saves.

As the conflict progressed, the enemy threat became more sophisticated with the introduction of hand-held surface-to-air missiles (SAM) and improved Anti-Aircraft Artillery (AAA). As a result, the SARTF could not adequately protect the helicopter on daylight missions. This change in threat drove a change in the concept of operations. ———.

The Air Force developed the HX program to determine a suitable helicopter to accomplish this mission and selected the HH-60.

Question. If HH-60 is not procured, when will the Air Force be able to fund a replacement search and rescue helicopter program?

Answer. Under the current fiscal climate, we are unable to predict when the Air Force will be able to fund a replacement search and rescue helicopter program.

Question. How much is currently funded in your five year defense plan to replace the obsolete search and rescue helicopters in your inventory?

Answer. There are no funds in the five year defense plan to replace the current search and rescue helicopter fleet. The Air Force is, however, funding substantial improvements to our SOF rotary wing fleet and these helicopters may be used to perform some combat rescue missions.

Question. Has the Commander of the Military Airlift Command changed the requirement to replace the Air Force search and rescue helicopters?

Answer. No, Headquarters Military Airlift Command Statement of Need (SON) 4-77, "Combat Helicopter Modernization Program", is still a valid requirement although it is currently unfunded.

Question. Why would the Air Force want to forego the savings that would occur now by participating in the Army's multiyear helicopter procurement program?

Answer. The Air Force's decision to cancel the HH-60 was based in current fiscal constraints and competing priorities. The Army plan to procure UH-60 helicopters through FY 1990 may provide a means by which we can procure HH-60s in the future.

Question. Could you realistically expect to ever obtain better prices in the future?

Answer. No, probably not. However, as stated, current fiscal constraints and competing priorities have dictated our current course of action.

OPERATIONAL SUPPORT AIRCRAFT

Question. The Air Force is currently leasing 80 Learjet C-21 aircraft and 40 Beech C-12 aircraft. The Air Force may purchase the aircraft in FY 1989 or FY 1992. Dr. Cooper, what consideration is being given to purchase these aircraft earlier than allowed by the current contract?

Answer. We have looked into the possibility of buying these aircraft before the current leases expire. If we can purchase the aircraft now for less than what we are paying by leasing the aircraft until FY 1989 and then buying, we will consider early procurement. However, we have not budgeted funds to convert either lease to a buy, nor do we currently plan to reprogram funds for this purpose.

Question. What consideration is being given to changing the contractual flying hour rates?

Answer. In Dec. 85, the Air Force supported the Military Airlift Command's (MAC's) request for additional C-12/C-21 flying hours to provide enough hours to adequately season the pilots from undergraduate pilot training and to correct the growing imbalance in the number of copilots to aircraft commanders. During negotiations to increase the flying hour rates, the Air Force did not allow the increase in aircraft lease rates that Gates proposed, and we could not reach an acceptable agreement. Therefore, the C-21 utilization rate will remain at the 56-hour baseline. We plan to reallocate a portion of the programmed FY 1986 C-21 hours into the C-12 flying hour program.

Question. What is the rationale for either action?

Answer. The rationale for buying early is simple—if we can buy the aircraft before the current leases expire and save money in the long term, then it makes sense to buy early. Fiscal constraints and program priorities, however, do not make such a decision as clear cut as it appears on the surface. Our rationale for increasing the C-12 and C-21 flying hour program is twofold: first, to properly season those pilots coming directly from undergraduate pilot training who are already in the system; and second, to restore the mixture of 50% aircraft commanders to 50% copilots so that we can continue an effective aircrew training program. To accomplish both of these goals, we must increase aircraft utilization rates above 56 hours/aircraft/month.

Question. Would both aircraft types be treated identically?

Answer. No. If we purchase any aircraft early, we would focus on a C-21 buy first since we have negotiated C-21 prices in hand. Beech Aircraft Corporation has not approached us with any proposals for an early buy, and we have no indication that Beech would be willing to reduce their purchase prices to meet our breakeven points. We would, however, consider buying C-12s early if we could realize a long-term savings and if we could afford to reprogram dollars accordingly.

Question. What cost-benefit analysis has the Air Force done on contractor unsolicited proposals?

Answer. The Air Force has completed its economic analysis on the unsolicited proposal we received from Gates Learjet Corporation. Our analysis shows that if we can purchase the C-21A aircraft for approximately $2.7M or less (using the 3-Month Treasury Bill Rate of 7% as a basis), we will save money as compared to continuing our present lease agreement until FY 1989 and then buying. Although we have not received an unsolicited proposal from Beech Aircraft Corporation, by aplying the same Treasury Bill Rate to the C-12F program, we can save money over continued leasing if we can buy these aircraft for approximately $1.4M or less.

Question. Do you plan to submit a reprogramming request to the Congress to propose such changes in these programs?

Answer. If the Air Force were to seek Congressional approval for early procurement in either FY 1986 and/or 1987, we would initiate action through a reprogramming request to all four Congressional committees. We would handle any procurement action in FY 1988 and beyond through our normal funding process. We do not plan to seek Congressional approval for an increased Operational Support Airlift flying hour program for the C-12 or the C-21 aircraft.

T-38 MODIFICATIONS

Question. The T-38 aircraft, which is a version of the F-5 fighter is the advanced trainer aircraft used by the Air Force after basic training is accomplished in the T-37 primary trainer aircraft (soon to be replaced with the T-46). The current budget shows that the Air Force is planning to invest over $451 million in the T-38 through extensive modifications over the next few years. General Randolph, please explain what needs to be done to the T-38 aircraft to extend its life.

Answer. PACER CLASSIC is a comprehensive supportability program that incorporates modification and modernization efforts which are necessary to keep the T-38 aircraft flying through the year 2010. The program is designed to resolve many future supportability issues before they affect fleet readiness. The Durability and Damage Tolerance Analysis (DADTA) and the Aircraft Structural Integrity Program (ASIP) predicted areas in the primary structure that would need life-extension modification or repair before 2010. Analysis of spares obsolescence and hardware non-supportability in the 1990s has identified avionics modifications requiring replacement of selected aging avionics systems. Engine modernization enhancements are included to reduce the need for maintenance on related components and to simplify the maintenance when it is needed. The PACER CLASSIC modifications fall into four general categories of justification; airframe life extension, safety of flight, supportability, and reliability and maintainability.

Question. How long will the T-38's last, once they are modified?

Answer. The T-38s will last beyond the year 2010.

Question. How soon would the Air Force then need a replacement aircraft for the T-38? What is the impact if these modifications are not funded?

Answer. A T-38 replacement aircraft would not be needed until after 2010 based upon the logistics benefits of PACER CLASSIC. Operational requirements would have to be determined separately to validate an aircraft replacement prior to 2010.

If the modifications are not funded, then we will begin to restrict aircraft operations beginning in FY86/4 due to structural fatigue problems, which will implact pilot production commensurately.

T-46

Question. Dr. Cooper, the secretary of the Air Force's report states that the current Air Force primary trainer, the T-37, has "recognized operational deficiencies and safety concerns." It also states that your propose to cancel the T-46 which is to replace the obolete T-37, "due to fiscal constraints." The report indicates that you have a shortage of T-37s due to "aircraft losses and foreign military sales." Dr. Cooper, how could any alternative other than purchase of new aircraft—such as the T-46—even be feasible?

Answer. The decision to defer replacement of the T-37 was forced by significant reductions in planned growth in the Air Force budget. We decided it was more prudent to maintain healthy programs and trim troubled ones where there were viable alternatives. Our logistics community has assured us that, with minimum modifications, they can extend the life of the T-37. This may have to be our choice until budgetary flexibility is restored so that we can proceed with the desired replacement. We will formulate our final strategy after a T-46 program review in March.

Question. The T-46 is less expensive to operate than the T-37. The Air Force has told us that a one-year slip in the IOC (initial operating capability) of the T-46 would cost $78 million. If Congress adopts the Air Force proposal to terminate the T-46 program, what would be the earliest date that a T-37 replacement would be fielded? How does this compare to the original T-46 IOC date? How much would the slip cost?

Answer. We have not yet determined our final approach to T-37 replacement, which we feel we must defer in the current fiscal climate. It is therefore impossible to compare IOC dates or relative costs.

Question. What do you plan to do with the funds provided for FY 1986 procurement of T-46 aircraft?

Answer. We will be reviewing the T-46 program with Air Force System Command in mid-March. Based upon that briefing, we will determine our plan for the FY86 procurement funds.

Question. What is the status of current T-46 flight testing, and have major problems been detected?

Answer. We are pleased with the fine flight test effort that is taking place at Edwards AFB, CA. After some unfortunate delays caused by faulty flutter test instrumentation, the program has now completed over 55 flights while amassing over 80 flight test hours. These tests have shown that the aircraft is easily maintainable and appears at this stage to be highly reliable. Flight test has pointed out the need for an artificial stall warning. The basic aircraft has none, and a very positive stall warning is particularly necessary with new student pilots. Flight test has also shown that aircraft drag is higher than expected. Since the aircraft weight has grown from that originally proposed, the combination of higher than predicted weight and drag means that a number of performance-related specifications are not likely to be met without extensive contractor effort.

CV-22

Question. The Air Force is planning to procure 80 V-22s for the long-range special operations mission. The requirement for this mission includes a radius of a least 700 miles. However, the engine recently selected for the V-22 will have a mission radius of 620 miles, and the contractor only guarantees 550 miles. Does the Air Force still plan to procure V-22s for this mission?

Answer. Yes. The V-22 range, as currently estimated, will meet the Air Force's minimum acceptable requirement.

Question. If so, how many?

Answer. The current Air Force program includes 80 aircraft.

Question. Is the Air Force considering the in-house development of an allternate engine to satisfy the long-range SOF requirement?

Answer. No. While we continue to evaluate the long-range SOF capabilities of the V-22 with the Allison engine, we are not currently considering in-house development of an alternate engine.

Question. For the record, please state what percentage of the estimated infill, resupply, and exfill, requirements can be met by aircraft with a mission radius of: (a) 550 nautical miles; (b) 620 nautical miles; and (c) 700 nautical miles.

Answer. Preliminary results of an ongoing Air Force SOF requirements study indicate an air refuelable aircraft capable of a 550NM unrefueled combat radius can satisfy approximately ———.

AIRCRAFT SPARE PARTS

Question. The Congress has provided dramatic, sustained growth in Air Force replenishment spare parts funding—a total of $17.8 billion in the last six years. Last year for the first time in many years the Congress reduced Air Force replenishment spares. This was due to audit reports indicating overstatement of requirements, savings from spare parts management reforms, very large prior year spares unobligated balances, lower inflation, and excessive use of unpriced contracts for spares.

Since Congress reduced your FY 1986 replenishment spares budget by $800 million, if the requirements had been valid we would have expected your FY 1987 budget to increase. Instead, the total Air Force FY 1987 aircraft spare parts budget is $2.6 billion less than the FY 1987 estimate in last year's budget. Dr. Cooper, what has caused the sudden change in Air Force priorities?

Answer. We have not changed our priorities, but fiscal realities do not allow funding of all our requirements. The stark reality of reduced fiscal levels from last years projection accounts for the lower FY87 request. Specifically, the total Air Force FY87 funding level is $15.5 billion less in the FY87 FYDP than was projected in the FY86 FYDP for last year's President's Budget. Hard decisions had to be made to ensure an appropriate balance among all competing priorities. Despite scarce resources, the FY87 request fully funds peacetime requirements, WRSK/BLSS requirements for new authorizations and kit updates for some high priority strategic airlift systems. However, the overall requirement is only 56% funded.

Question. How can you justify adding 30 more F-16 aircraft in FY 1987 while cutting spares by $2.6 billion?

Answer. In the FY 1987 President's Budget we are planning the procurement of 216 F-16C/Ds. This is an increase of 36 aircraft over the FY 1986 President's Budget. This increase is justified by the Force Modernization Program for the tactical air forces which plans increases in combat capability of the present inventory, maintains an acceptable average aircraft age of approximately ten years, and permits a modest growth rate to achieve the Air Force goal of 40 tactical fighter wings by 1991. We are more than three wings short of this objective and must procure over 260 aircraft per year to reach the Air Force goal. The current plan reflects a conscious decision to allocate more resources toward aircraft procurement. Though fiscal realities have resulted in an overall reduction of Air Force aircraft spares by $2.6 billion, F-16 spares have contributed $159.3 million of this reduction. Even with the increase in F-16 aircraft quantity, and the introduction of the Multinational Staged Improvement Program III subsystems, the maturity of the system combined with reliability and maintainability improvements have lowered the F-16 spares requirements.

Question. In October, 1985, GAO reported to the Committee that the Air Force had $828.9 million of spare parts on order which exceed current requirements. Dr. Cooper, why has the Air Force bought so many excess spare parts? How many of these will be scrapped as soon as they are delivered?

Answer. Excess stocks are only a small percentage of our total inventory. The on-order excess is applicable to weapon systems that will be used during the time they remain in our active inventory. A recent study involving over 700 items indicates that most of the potential excess acually has valid current requirements. As we continue to enhance our data systems through the development of the Requirements Data Bank, better analysis tools will be available to assist us in identifying excess requirements. None of the items reported by the GAO are planned to be scrapped as soon as they are delivered. All items on-order are against active weapon systems. Current policy prohibits disposal of any assets associated with active weapon systems.

Question. How often do you personally review management statistics on excess spare parts inventory? Do current statistics show you getting better or worse? Do you even have any current statistics?

Answer. The Air Force reviews potentially excess spare parts inventory on a quarterly basis. In many cases, our antiquated requirements system incorrectly identifies items as excess. We recently conducted a study involving over 700 items which indicate that .8% of our on-hand inventory, and 2.7% of our on-order inventory is potentially excess. We consider this well within reasonable inventory management limits. Our recent statistics indicate an improvement from FY84. We are actively pursuing the management of our potentially excess stocks to ensure efficient use of our limited resources.

Question. What actions will the Air Force take to minimize excess spare parts inventory in the future?

Answer. The Air Force follows the Department of Defense (DOD) policies outlined in DODD 4100.37, Retention and Transfer of Materiel Assets. The Air Force has placed increased management attention on this issue. Tighter file maintenance procedures have been instituted to ensure that the proper identification is made of what materiel is truly excess. Termination of excess on-order stocks is made when possible. Finally, the Air Force has escalated disposal of obsolete weapon system items. The Air Force is fully committed to properly manage its assets.

Question. Air Force spare parts budgets have contained serious errors in determination of requirements each year since fiscal year 1982. Last year, the Committee discovered that three independent reviews of the Air Force spare parts budget each concluded overstatement of requirements by at least $800 million. Dr. Cooper, how confident are you of the accuracy of your FY 1987 spare parts budget request?

Answer. The Air Force is confident that the FY87 spare parts budget request is accurate. The conclusion that our FY86 budget was overstated by $800M was the result of a basic misunderstanding of the interaction between our macro forecasting models used for programming, item-specific computations used for the budget submission and senior management reviews which occur throughout the process. This process is well documented and supportable. The FY87 budget request is 100% item specific, based on the DO41 Recoverable Item Computation System, and reflects the result of management review to ensure budget executability.

Question. The Air Force had $1.8 billion of unobligated spares funds at the end of FY 1985. A recent press article states: "The Air Force Logistics Command ordered its spare parts buyers to spend as much money as possible in the last 10 days of 1985 because appropriated funds are piling up faster than the Air Force is using them."

Dr. Cooper, why does the Air Force have such large, unobligated spares balances and why are actions to "speed up" spending necessary?

Are we incubating the next batch of spares "horror stories"?

Answer. AFLC's direction to its buyers has been largely misununderstood. While their message encouraged "maximum" execution of their approved program "within the constraints of law, directives, prudence and bona fide need rules," this guidance was consistent with the Command's historic emphasis on program execution. In fact, obligations during 1/FY86 actually lagged behnd those in 1/FY85 (3010 Appropriation). Flux in spare parts buying resulting from several years of acquisition reforms and concurrent increases in Congressional funding have greatly complicated program execution. Despite this changing environment, a track from FY82–85 reveals consistent and sustained improvement in first year obligations—from 81% in FY82 to 89% in FY85. Nevertheless, the Air Force has been critized for allowing increases in unobligated balances. Strong DOD management attention in this area has almost eliminated these balances. PY84 is currently 96% obligated; PY85 is 90% obligated. Both will be closed out by Sep 86.

More importantly, these improvements are being made without lowering PY86 execution which is currently ahead of our historical obligation pace.

Question. The same article states that OSD is withholding $3 billion of your FY 1986 spares funding from the Air Force in an effort to eliminate excessive prior year balances. How much of your FY 1986 spares budget has been released to the Air Force? How long do you expect the funds to be withheld? What is the impact on Air Force readiness?

Answer. OSD has released $1162.8 million of the FY 1986 spares budget appropriation to the Air Force: $955.1 million for aircraft replenishment and $217.7 million for initial aircraft spares. Even though OSD has not released the total program funding, AFLC is continuing all administrative actions leading to contract award. We are confident OSD will release funds to meet our contractual obligation needs; however, we have no specific date when this will occur.

The delay in release of funds will not have an impact on readiness as long as OSD continues to release funding to meet our obligation needs. Should this not occur, the readiness impact will not be evident until leadtime away, nominally two years. At this time, there is no impact on our ability to execute the FY 1986 program because we are processing PR's and initiating the program on the basis of total funding. Given this acquisition planning, we remain confident that we will meet our first year execution goals: 100% commitment and 85% obligation for A/C replenishment spares and 80% commitment and 60% obligation for A/C initial spares. As of the end of February, obligations are ahead of forecasts.

Question. Describe how the requirements in the current budget request were determined, and how this relates to the methodology used last year. Specifically, is the normally computed AFLC requirement or a Macro model the basis for the FY 1987 replenishment spares budget? If AFLC, what "as of" date was used?

Answer. The requirements presented in the FY87 PB are based on the item specific DO-41 Recoverable Consumption Item Requirement System, dated 31 March 85. This is consistent with the FY86 President's Budget.

Question. Compare the latest AFLC D041 requirements by category (POS, WRSK/BLSS, OWRM) for each fiscal year 1985 to 1987 to the funding in your current budget to Congress. (Indicate the "as of" date of the AFLC amounts and show any major Air Staff additives or policy changes.)

Answer. The FY87 Budget Estimate Submission to OSD reflects AFLC scrubbed requirements for FY 1985 to 1987 as of the 31 Mar 85 D041 computation. Requirements and funding shown below:

	Fiscal year 1985		Fiscal year 1986		Fiscal year 1987	
	Requirement	Fund	Requirement	Fund	Requirement	Fund
POS	2,516	2,516	2,437	2,437	2,200	2,200
WRSK/BLSS	798	798	1,349	1,099	1,461	1,340
OWRM	593	593	381	0	461	0
Total	3,907	3,907	4,167	3.536	4,122	3,540

The FY87 President's Budget restates FY 1985–1987 requirements and funding as adjusted for funds/inflation and their corresponding impact on requirements.

	Fiscal year 1985		Fiscal year 1986		Fiscal year 1987	
	Requirement	Fund	Requirement	Fund	Requirement	Fund
POS	2,516	2,516	2,345	2,345	2,078	2,078
WRSK/BLSS	808	808	1,329	528	2,009	472
OWRM	593	593	378	0	455	0
Total	3,917	3,917	4,052	2,873	4,542	2,550

For FY 1985, WRSK/BLSS increased by $10 million to reflect dollars previously withheld for reprogramming. Since the President's Budget, $40.5 million was removed for Gramm-Rudman reductions.

FY86 requirements and funding were adjusted for inflation ($112M) and funding was also reduced to reflect the 1986 appropriation. Since the President's Budget, $44 million was removed for Gramm-Rudman reductions.

FY87 requirements were adjusted for inflation and the effects of unfunded carryover from FY86. FY87 funding reflects OSD adjustments, including revised inflation factors.

There are two policy changes that affect our budget. The major change is for war reserve materiel. Three initiatives began in FY85: enhanced support objectives, use of wartime failure rates for Electronic Countermeasure (ECM) items, and use of actual wartime base repair cycle times up to six days. We estimate costs at $650 million for FY85, $358 million for FY86 and $379 million for FY87. The big cost driver is ECM wartime rates. However, due to limited funding, most of the FY86 and FY87 requirements will carry forward to FY88 and beyond. The second policy change will resolve current inconsistencies between our base stock level distribution system and the wholesale requirements system. This is estimated to cost $67M in FY87.

Question. Explain the amounts of and rationale for any "carryover" requirements in the current budget.

Answer. The FY87 requirement contains $835.3M of unfunded FY86 WRSK/BLSS carryover and $393.9M of unfunded FY86 OWRM carryover. The logic is straight forward: a requirement not funded in one year does not go away, but remains valid and is "carried over" to the next year.

Question. Describe how the factors which GAO challenged in the March, 1985 AFLC requirements computation—namely, administrative leadtime and variable safety levels—compare to those used in your new budget. Provide by month the most recent 12 months experience for spares administrative leadtime. Compare this to the number of days used in your budget. How do Air Force administrative leadtimes compare to those of the other Services?

Answer. The 31 Mar 85 AFLC requirements computation is the basis for the FY87 Presidents Budget. The administrative leadtime used to forecast requirements averages 8.7 months (267 days); variable safety levels average 27 days for base and 33 days for depot.

Our procurement data systems do not identify actual administrative leadtimes to specific budget programs, however we can look at procurement actions in the $100,000 to $6,000,000 category. These are considered most representative of aircraft replenishment spares procurements. Quarterly data up through Feb 86 follows:

Administrative Leadtime in Days (For Completed Actions)

December 1983	207
March 1984	222
June 1984	213
September 1984	228
December 1984	243
March 1985	266
June 1985	266
September 1985	257
December 1985	232
February 1986	255

Data for the other services' comparable replenishment spares accounts is as follows: Army aviation, 183 days; Marine Corp, 181 days; Navy aviation stock fund, 175 days. The key difference between the other services' data and Air Force is that the other services data reflects averages for all procurements—regardless of when the last contract was awarded. Conversely, the Air Force data above is actual data depicting administrative leadtime of contracts awarded in that quarter.

Question. What actions do you have underway to reduce administrative leadtime? When can results be expected and what will be the dollar savings?

Answer. The issue of increased administrative leadtimes (ALT) is a complex one. ALT is defined as the time required to prepare, coordinate and process a purchase request through the contracting process. For replenishment spares, ALT has risen from an average of 180 days in FY83 (weighted by dollar value) to 276 days at the end of FY85. We attribute these increases to a combination of the new congressional public laws, internal Air Force acquisition reforms resulting from our AFMAG study and the subtle impact of a more cautious approach among both DoD and industry contracting personnel in the pricing arena. Some of these ALT increases are outside our control. The public laws (e.g., PL 98-72 increased synopsis requirements; PL 98-396 increased leadtime on justification and approval requirements on contracts over $10M) have been enacted, as have many of our internal reforms. We are hopeful that with institutionalization of these reforms our process will become more efficient. Similarly, ADP improvements mandated by AFMAG will give our acquisition personnel improved tools for doing their tasks. However, the net effects are difficult to predict. Currently our ALT statistics show leadtime remaining high. Based on this, we do not anticipate a significant reduction in administrative leadtimes or dollars to support leadtime requirements.

Question. Provide the "as of" dates on which AFLC DO 41 requirements computations or stratifications were run in the years 1982 to 1985. What is the schedule for 1986 and 1987? Explain the current cutback that evidently has occurred. Explain in detail why the June, 1985 quarterly stratification results cannot be located by the Air Force. Did you run one? More specifically, did you run one and then bury the results?

Answer. The "as of" dates for the DO41 computations are 31 March, 30 June, 30 September, and 31 December for each year. These are the "as of" dates of the computations since 1982 and will be the "as of" dates for the next two years. The change in emphasis relates to file maintenance and buy generations. While all computations are processed, only the September and March computations are used for file maintenance, and the March computation is used for buy generations. Because the DO41 requires intensive manpower to process accurately, item manager actions have been limited to the September and March computations. The June and December computations are used to introduce system refinements/upgrades and to provide visibility to the item managers. However, since these computations are not file maintained, they cannot be used in the aggregate for overall evaluations. The June 1985 computation provides a good illustration of the prudence associated with this management practice. This computation was used to introduce an attempted upgrade to the requirements computation system. The computation was processed but because the upgrade essentially failed, the results were not usable. Valuable resources required to update and file maintain the system were not wasted since the Air Force had designated the June computation for processing of such high-risk upgrades.

Question. Compare the administrative leadtime and variable safety level factors used in the March, 1985 computation to those used in the June, 1985 stratification before the results were "lost".

Answer. As stated previously, the June and December computations are not generally used for buy and budget purposes. Minimum manual file maintenance is accomplished during this "off" cycle compared to the 350 thousand transcations processed during the March and September cycles. The primary purpose of the "off" cycles is to test data system changes. Even if we had planned to use the June computation, interface and system problems would have precluded this. With regard to administrative leadtime, data indicates that our decision to "floor" leadtime at 9 months for most items reflects actual experience on recent contract awards. For variable safety levels, we continue to use the same methodology in selecting budget support objective factors for all buy and budget cycles.

Question. The Air Force has the most difficulty in determining its spares requirements. Running fewer computer reports reduces visibility into actual requirements and increases the risk of buying unneeded parts. Should Congress decrease spares funding for a year or two until you get this problem resolved?

Answer. No. A decrease in spares funding would degrade our ability to support weapon systems. The problems in presenting our spares requirements center about our efforts to provide you the most current and accurate numbers. The computer reports support these attempts. The Air Force is running the same number of computer reports today as it has historically. We attempt, however, to only buy and budget off of the March computation. This provides a stable requirement that furthers the accomplishment of Congressionally recognized goals such as competition and economic order quantities. The other reports are used to maintain repair requirement visibility and to introduce systems changes or upgrades. We do share your concern over the visibility afforded spares. The Requirements Data Bank and the Stock Control and Distribution System are two efforts underway to improve both asset visibility and requirements determination. Continued Congressional support for these systems will facilitate the overall management of Air Force spares.

Question. A recent GAO draft audit critcizes the Air Force for a "buy early" policy for spares which caused the Government to needlessly incur holding costs for excess inventory. What was the rationale for the "buy early" policy? Since your budget has allowances for administrative leadtimes and safety levels, how can this policy be justified? Is it still in effect?

Answer. The GAO draft audit is incorrect in a number of areas and the calculation of holding costs is one such area. The Air Force does not have a "Buy Early Policy" as such. While the paperwork to "initiate" a purchase may be performed in advance, the requested delivery date will represent the time at which the ordered materials will be required. Our objective is to identify to the contracting community, as soon as is practical, the order quantities and due dates for materiel requirements. With that information, the contracting personnel can organize their workload and assure that major policy objectives such as increased competition and economic order quantity and pricing as achieved. While we do have administrative leadtimes and safety levels, it still is to our advantage to submit orders to contracting as soon as possible to allow for an orderly acquisition of needed assets. Since the requested delivery date is not revised or manipulated, contracts are let against the actual time within which the assets will be required.

Question. What changes have been made in your budget to reflect elimination of the buy early policy? What is the relationship between the buy early policy and the large amount of excess spares inventory discussed previously?

Answer. The planning year concept, to get a head start on extending administrative leadtimes and provide the contracting community the asset requirements as soon as it is practical, has no effect on the budget. It is not the Air Force policy to purchase assets in an earlier fiscal year prior to leadtime away from need unless it creates a more economic buy. If more economic buys are generated, any early assets are considered to offset requirements and are accommodated for in the budget. Normally, early initiation of buys simply gives the contracting community additional time to process paperwork. There is no proven relationship between early buys and excess assets.

Question. Does the Air Force have a system for monitoring excess inventory and cancelling procurement actions for items that are no longer needed? How much of the $1.1 billion on-order excess as of March 31, 1985 has been terminated? By fiscal year, since 1980 how many such terminations have been made? What are your criteria for termination actions?

Answer. The Air Force system is currently directed to support the item manager. Candidate items are identified to the item manager who must evaluate the impact of termination actions and must initiate terminations when appropriate Overall tracking mechanisms to follow termination actions have not been developed due in large part to the cumbersome and outdated automation systems currently in use. AFLC Regulation 57-4, Chapter 32, establishes policy, procedures, and responsibilities associated with termination of on-order materiel. A termination level is calculated on an individual item basis. The termination level basically computes the known requirements for assets. Those assets that are on-order and exceed the termination level are subject to management review, and the associated contracts may be reduced or terminated. At the present time, we project approximately $207.4 million on-order to be excess to our needs. Poor file maintenance of our 1960s technology data systems is the major contributor to this problem. Data by fiscal year is also unavailable owing largely to the aging data system. Continued Congressional support for improvements in data information/management systems such as the Requirements Data Bank and the Stock Control and Distribution System will provide better analysis tools to assist us in identifying, tracking, and explaining excess requirements.

Question. Explain why Oklahoma City ALC's on-order excess increased by 82 percent to $541 million during the third quarter of FY 1985?

Answer. We are unable to duplicate the $541M contained in your question. The Oklahoma City ALC on-order excess for the March, June and September 1985 computations were $231.1 million, $303.5 million, and $213.2 million respectively. The significant difference in the June 1985 computation is caused by the problems encountered in running the computation. The June 1985 computation did not process properly because attempted system upgrades failed. As a result, the June 1985 computation information is inaccurate and, therefore, not usable.

LANTIRN

Question. The 1987 budget proposes $785 million for production funding of LANTIRN night attack pods. $514 million of production funds have been appropriated in the two previous fiscal years. The system has two main components, the navigation pod and the targeting pod. General Randolph, what is the development status of the targeting pod which previously delayed the program due to testing failures? When will the production decision be made?

Answer. The targeting pod did not mature as fast as the navigation pod, and the Air Force restructured the LANTIRN program in August 1984 to accommodate a split navigation and targeting pod production decision. The targeting pods were refurbished in the August-November 1984 timeframe and began a "fly-fix-fly" phase in December 1984. Development Test and evaluation (DT&E) for score was restarted in early April 1985 as scheduled. To date, approximately 412 targeting pod sorties have been flown, with the pods accumulating 100,000+ miles of flight, 50,000+ of which were at night. Automatic Gain Control (AGC), F-16 aircraft software improvements, and slew control updates were installed in the May-June 1985 timeframe to correct performance problems discovered in the early testing. Since that time, pilots have noted an overall improvement in performance of the FLIR picture and tracker stability. The pod has achieved lock on to vehicle-size targets at 6-7 NM (3-4 NM was expected), and accomplished numerous IR Maverick missile handoffs and demonstrated successful laser ranging and designation capability. DT&E was completed in December 1985, and the results were encouraging in terms of providing an acceptable pilot workload. Initial Operational Test and Evaluation (IOT&E) began in January 1986 to determine the effectivensess of LANTIRN in an operational environment. A production decision is planned for May 1986 after completion of the IOT&E.

Question. Have the two pods been certified together as an integrated system? Have all contract performance specifications been met?

Answer. Yes, the LANTIRN pods (navigation and targeting), along with their companion wide angle raster heads-up display (HUD), have been integrated and certified on modified single seat and two seat F-16s for Development Test and Evaluation (DT&E)/ Initial Operational Test and Evaluation (IOT&E) flight testing. The navigation pod has flown over 835 sorties, with 100,000+ miles flown at night, 30,000+ of which were below 200 ft. Of these sorties, 412, were flown (covering 50,000+ miles at night) with the complete LANTIRN navigation/targeting pod system.

Due to the number of variables involved in the development program which were not under the control of the contractor, the full scale development contract for the LANTIRN system did not specify performance requirements, but system goals. DT&E/IOT&E testing and subsystem tests have provided the Air Force with the system performance specifications required to accomplish the LANTIRN mission. These system performance requirements have been incorporated in the production specifications which are part of the firm fixed-price production contract. Specifically, this includes a stringent reliability and maintainabiltiy program which incorporates environmental stress screening, reliabiltiy qualification testing, environmental qualification testing, and a maintainability demonstration. Additionally, an extensive performance warranty clause requires the contractor to repair or replace any failed item for a period of 24 months or 400 operating hours at no cost to the Government. These provisions have been included in the contract to ensure that the production pods meet our performance requirements.

Question. Has the integrated system been flown, tested, and certified to work on various types of Air Force fighter aircraft?

Answer: The LANTIRN system (navigation and targeting pods), along with their companion wide angle raster heads-up display (HUD), have been integrated and certified on modified single seat and two seat F-16s for Development Test and Evaluation (DT&E)/ Initial Operational Test and Evaluation (IOT&E) flight testing. The navigation pod has flown over 835 sorties, with 100,000+ miles flown at night, 30,000+ of which were below 200 ft. of these sorties, 412 were flown (covering 50,000+ miles at night) with the complete LANTIRN navigation/targeting pod system. Additionally, the LANTIRN system is currently being integrated on the F-15E, and flight tests are scheduled to begin in FY 1987.

Question. What causes the $350 million growth between fiscal year 1986 and 1987 procurement funding?

Answer. The Air Force budget request for FY 86 was $423.9 million. The budget request for FY 1987 is $786.1 million. This profile is the same as that requested in the FY 1986 President's Budget and does not constitute cost growth. The LANTIRN firm fixed-price production program is structured around an investment strategy to maximize the number of pod sets procured within the Air Force LANTIRN budget. The FY 1986 procurement program includes building an automated production line to achieve an optimum production rate; 7 navigation pods plus 2 sets of navigation pod line replaceable units (LRUs) for use in factory automatic test equipment development; 2 targeting pods; and 4 sets of base level support equipment. The FY 1987 procurement program includes continuation of the early investment in an automated production facility; a ramp up from low rate initial production of the navigation pod in FY 1986 (7 pods) to full rate production in FY 1987 (143 pods); an increase from 2 targeting pods in FY 1986 to 7 pods in FY 1987 plus 2 sets of targeting pod LRUs for use in factory automatic test equipment development; and 6 sets of base level support equipment.

Question. Describe for the record how the fiscal year 1986 and 1987 LANTIRN budgets relate to the LANTIRN contract both in terms of funding and production rate? Describe the amount of flexibility in the contract to vary quantities, the minimum and maximum quantities in both fiscal years, the cost trade-offs involved, and the level at which the current budget is predicated.

Answer. The relationship between the FY 1986 and 1987 LANTIRN budgets and production contracts in terms of funding (in millions of dollars) and production rates is noted below:

	1986	1987
LANTIRN budget	423.9	786.1
Production contract	413.4	714.7
Navigation pods	7	143
Targeting pods	2	7
Support equipment	4	6

The difference between the LANTIRN budget and the production contract lines above is for Other Government Costs, which include initial spares, depot level support equipment, Avionics Integrated Support Facility (AISF), Government Furnished Equipment, technology modernization program, and engineering change order/program office support.

The LANTIRN firm fixed-price (FFP) production contract does not include any negotiated deviation from the above pod quantities or production rates. The contract does contain a provision for insufficient funding of a negotiated options (up to 10% of the option price each year in FY 1986–1990). This provision places ceiling on the cost increase to the program provided the reductions are within the 10 percent limits. However, if any funds are cut from the program, the Air Force would be required to renegotiate that year's options and all future options with associated cost increases, quantity reductions and schedule adjustments. Any changes in funding or schedule will delay fielding a Tactical Air Forces night attack capability.

More pods could have been purchased in FY 1986 and 1987, but the Air Force made a conscious decision to build an automated pod production line early in the program to maximize the number of pods that can be bought within the Air Force LANTIRN budget.

Question. Will less capable F-16CM aircraft receive LANTIRN? What is the effect of the F-16CM initiative on the need for LANTIRN quantities at the rate budgeted?

Answer. The Air Force plans to allocate 300 of the 700 LANTIRN pod sets (navigation/targeting) to 350 F-16C aircraft equipped with the AN/APG-66 radar (referred to in this information request as the "F-16CM" aircraft). The F-16C initiatives referred to in the request has no effect on LANTIRN production rates or quantities. The remaining pod sets will be allocated as follows: 392 pod sets for F-15Es, and 8 pod sets for training and depot maintenance.

Question. A contractor-proposed A-7 aircraft upgrade includes a single seat night, under the weather attack mission capability which apparently encompasses the Air Force six minimum essential characteristics necessary to do this mission. Does the aircraft provide promise for an affordable cost-effective and complementary alternative to LANTIRN?

Answer. We are interested in the contractor proposal for upgrading the A-7D to include a night attack capability. The night attack capability has not been defined completely, but could include several options including the LANTIRN system. The upgraded A-7D is not an alternative to LANTIRN. The Air Force is evaluating the contractor proposal but has not decided to pursue this upgrade yet, and it is not a part of the FY 1987 budget request.

Question. What problems have been detected with pilot workload when using the LANTIRN targeting pod?

Answer. The LANTIRN targeting pod is currently in Initial Operational Test and Evaluation (IOT&E) to determine the effectiveness of LANTIRN in an operational environment. This will be addressed from an operational effectiveness and suitability standpoint. One specific issue of the operational effectiveness area is pilot workload in a single seat aircraft. Recent improvements over last year's targeting pod performance, coupled with significant improvements in several other areas, give us confidence that the single seat night attack mission is doable. However, until the IOT&E is fully completed and all flight test data is analyzed, an assessment or conclusion would be premature.

Question. Can the targeting pod be used effectively in a single seat aircraft, given the pod's current clarity and reliability?

Answer. The current clarity (resolution) of the LANTIRN targeting pod forward looking infrared (FLIR) sensor has been sufficient to allow pilots to lock on to vehicle size targets at 6-7 NM (3-4 NM was expected). The targeting pod has also accomplished numerous IR Maverick missile handoffs and demonstrated successful laser ranging and designation capability. Targeting pod reliability has improved significantly since the restart of Development Test and Evaluation in April 1985 and is now tracking above the projected growth curve. This favorable trend in reliability is expected to continue.

The LANTIRN targeting pod is currently in Initial Operational Test and Evaluation (IOT&E) to determine the effectiveness of LANTIRN in an operational environment. This will be addressed from an operational effectiveness and suitability standpoint. One specific issue of the operational effectiveness area is single seat effectiveness. The above improvements to last year's targeting pod performance, coupled with significant improvements in several other areas, give us confidence that the single seat night attack mission is doable. However, until the IOT&E is fully completed and all flight test data is analyzed, an assessment or conclusion would be premature.

Question. Name any night attack device which on Air Force fighter aircraft, particularly those to be sold to foreign countries, have been demonstrated to work.

Answer. The PAVE TACK forward looking infrared (FLIR)/laser target pod provides a night delivery capability for laser-guided bombs. PAVE TACK is operational on the USAF F-111, RF-4, and F-4; it has also been demonstrated on the F-15. Australia and the Republic of Korea (ROK) are purchasing PAVE TACK pods for use on their F-111's and F-4's respectively. LANTIRN navigation and targeting pods have been tested on the F-16C and will eventually equip the F-15E. No foreign sales of LANTIRN are currently envisioned. The Night Owl targeting/laser pod has been tested on the USAF F-15. The Israelis successfully tested Night Owl on an F-16B in 1985, but have made no decision to purchase pods. Numerous air forces in the world have tested night vision goggles (NVG). THe USAF has tested NVG's on the F-111, F-4, RF-4, and the F-16. The US government has not sold the newest models of NVG's to foreign countries as yet.

PRECISION LOCATION STRIKE SYSTEM (PLSS)

Question. The 1987 budget proposes $109 million for the Precision Location Strike System which is used on TR-1 Aircraft. Congress appropriated $307 million for PLSS on the previous two years. General Randolph, at the Air Force Secretary's hearing, discussed the possible termination of the PLSS program. What is the Air Force's current thinking on the need to continue PLSS?

Answer. The Air Force is conducting a thorough review of the PLSS program. This review includes an examination of the requirement, the results of contractor testing of the RDT&E system to date, and the costs of deploying the system with various methods of logistics support. There have been recent delays in completion of the contractor integration effort which caused the Air Force to defer the production decision until adequate test data is available and analyzed. The Air Force will also be considering the advisibility of conducting Government controlled testing of the RDT&E system to verify contractor progress towards system performance goals before a production decision. After these reviews are completed in the March-April 1986 timeframe, the Air Force will amend PLSS schedules if required.

Question. What have results of PLSS tests shown? Does the system work well?

Answer. The results of PLSS contractor integration testing have demonstrated the ability of the system ——— and make reports available to system operators. Because more than 93 percent of all three aircraft test data was collected during January and February 1986, data reduction and analysis by the Air Force is not yet complete. The system currently is able to locate emitters ———. However, there are a number of software related problems which indicate that further development efforts will be required to make the system operationally useful and reliable. The extent of future development and test activity will be more accurately known when the Air Force analysis of the contractor integration flight test data is completed in the March–April 1986 timeframe.

Question. Has PLSS been deployed and has it been used in actual training missions? What have been the results?

Answer. PLSS has not been deployed and has not been used for training missions. PLSS has been operated by the prime contractor and the Air Force combined test force as part of the contractor conducted integration flight test program. Over 100 missions have been flown in support of PLSS testing. All functional capabilities of the PLSS system have been demonstrated during these missions. The primary purpose of the contractor integration missions, however, is not training, but rather resolution of development problems. While the system does operate, there remain a number of system operational anomalies which appear to be software related. Review by Air Force technical experts indicates that these problems can be resolved and that an operationally useful system will result. The system will begin Government controlled flight testing shortly to establish the actual system capability versus the specified performance.

Question. What are the alternatives to PLSS?

Answer. No other system or group of systems now available or under development can provide all of the capabilities that the PLSS system provides. Of course, other systems can provide some of the data that PLSS will gather. The utility of PLSS is related to its unique capabilities and also to the fact that it consolidates instantaneously, in one place, all the information needed to attack a hostile emitter. PLSS is the only system capable of locating emitters ———. The following systems each provide some electromagnetic intelligence data: Senior Ruby (U-2/TR-1); Rivet Joint (RC-135); TEREC (RF-4C); SR-71 aircraft systems; Combat Sent (RC-135); Navy E-2C aircraft and Army Quick Look (RV-ID) systems. The F-4G Wild Weasel aircraft provides strike capability in a limited area for short periods when the aircraft are on station. ———. In fact, PLSS was designed to overcome the short comings of these other systems.

Question. Is the fiscal year 1987 procurement request valid?

Answer. The Air Force is in the process of conducting a complete review of the PLSS system. This review includes a review of the system requirement, test results to date and alternative procurement plans which realistically anticipate funding levels for future years. Because there have been delays in the contractor's integration test effort, it will be necessary to examine the desirability of moving ahead with the procurement plan envisioned by the FY 1987 budget request. What impact these reviews will have on the 1987 procurement request cannot be determined until the Air Force completes its review in the March-April 1986 timeframe.

ELECTRONIC WARFARE EQUIPMENT

Question. Funding for many Air Force production programs for electronic warfare equipment was reduced last year because of delays in the development process. In general, DoD has been under fire for proliferation of redundant EW systems. Dr. Cooper, does the Air Force have a master plan for development and production of electronic warfare equipment?

Answer. Yes, the Air Force's single coordinated approach in the development and production of electronic combat (EC) systems is contained in the Electronic Combat Action Plan (ECAP). This focuses on commanders' wartime requirements and presents an investment architecture to achieve EC goals within 10 years. The ECAP provides investment guidance to promote the acquisition and support of a balanced electronic combat (EC) force of self-protection and disruptive assets to satisfy operation requirements. As a planning tool, the ECAP influences the Air Force Program Objective Memorandum (POM) through Major Commands (MAJCOM) budget actions and priorities. The ECAP is revised annually and concentrates on mid-term operational requirements, long-term support requirements and addresses emerging technologies for future applictions. The plan melds the threat, operational deficiencies, testing, support and Air Force EC systems planning into current programming actions. The result is a disciplined architecture for the acquisition of an affordable, supportable and integrated EC capability.

The Air Force has also taken an initiative to identify deficiencies and limitations in its present plan with the Air Force Electronic Combat Master Plan and Roadmap (ECMP&R). The ECMP&R (presently in internal AF coordination) will present conclusions and recommendations in order to establish a viable EC Force structure through the year 2010.

The purpose of the ECMP&R is to integrate the Air Force's plan and programs into a unified statement that shows EC requirements in a fiscally achievable structure. It is intended to be used as a foundation for planners, programmers and managers to work supporting documents in the planning, programming and budgeting system. Annual editions of the ECMP&R will document the changes in mission requirements, production scheduling, technological developments and funding. Implementation of this plan will make significant inroads into known EC shortfalls and will simultaneously provide a much needed modernization to both active duty and reserve forces. With respect to proliferation of redundant EW systems, the Air Force as you know is working with the other services and OSD on the DoD EW Plan for promotion of service commonality in EW systems. The DoD EW Plan published in August 1985 was the first step toward achieving improved, integrated service EW development and update programs. The Air Force is presently working new initiatives with the other services that will further promote service commonality in EW development and update programs .

Question. What recent organization changes have you made to improve management of electronic warfare systems?

Answer. Two parallel and integrated organizational changes have been implemented recently for the specific purpose of improving Electronic Warfare (EW) Systems management. At the field level, the Joint EW Management Group has been formed. This group, under the direct, joint auspices of ASD/CC and WR-ALC/CC, is physically located at ASD. It uses the current ASD/RW management structure augmented by current ASD program managers, and a combination of ASD and WR-ALC core planners and engineers. Additionally, AD HOC working groups will be formed as necessary to perform across command program management previews. This structure will allow for a more logical and interleaved approach to updating fielded systems and new system development. To further optimize EW management at the HQ USAF level, USAF/RD recently announced formation of USAF/RD-R, Special Assistant for Electronic Combat. This organizational change combines USAF/RDQE and USAF/RDPE. Prior to this change, RDQE had been primarily responsible for EW Advanced Development efforts (PE 63XXX), while RDPE was responsible for Full-Scale Development (FSD) (PE 64XXX). Consolidation of these responsibilities under a single manager (RD-R), has been accomplished to assure integrated management and centralized direction over the entire spectrum of EW programs from Advanced Development through FSD and the essential transition to production.

GLOSSARY

EW—Electronic Warfare.

ASD—Aeronautical Systems Division.

CC—Commander in Chief.

WR-ALC—Warner-Robins-Air Logistics Center.

RD—Deputy Chief of Staff for Research, Development and Acquisition.

RD-R—Special Assistant for Electronic Combat.

PE—Program Element.

FSD—Full-Scale Development.

Question. What efforts are being made to more closely coordinate your EW systems with those of the other services?

Answer. A number of joint service EW developments are ongoing. These include advanced development programs such as Integrated Electronic Warfare Systems (INEWS), pyrophoric flares, advanced expendables as well as full scale development programs such as Advanced Self-Protection Jammer (ASPJ) and high power jammer updates for the EF-111/EA-6B.

In order to more closely coordinate service EW developments, the Air Force is participating as an active member of the Electronic Warfare Oversight Group (EWOG) for establishing and monitoring joint service EW development update programs and initiatives.

The Air Force as you know is working with the other services and OSD on the DoD EW Plan for promotion of service commonality in EW systems. The DoD EW Plan published in August 1985 was the first step toward achieving improved, integrated service EW development and update programs. The Air Force is presently working new initiatives with the other services that will further promote service commonality in EW development and update programs.

Question. Your budget shows that the ALQ–131 ECM pod will not be produced beyond FY 87. What has caused the change in the requirement for ALQ–131 pods? Why is FY 87 funding needed at all?

Answer. The Air Force has a continuing requirement for ECM pods such as the ALQ–131 and ALQ–184. In light of current fiscal constraints, an initial decision was made to terminate ALQ–131 pod procurement after the next buy. This buy (full award in FY 87 with FY 87 funding) will provide a single (i.e., ALQ–131) configuration in Europe (USAFE). The decision on subsequent pod procuremet is being reviewed. The budgeted funds will permit procurement of one of the two pods. Both systems begin Operational Test and Evaluation (OT&E) in FY 86. The OT&E results coupled with life cycle cost analysis, effectiveness/growth potential analysis, and a total review of the user requirements will be the basis for future procurement.

AIRBORNE SELF-PROTECTION JAMMER (ASPJ)

Question. What is the status of ASPJ (Airborne Self-Protection Jammer) in terms of the development program and contracts for production? Provide for the record a table showing all ASPJ funds in each fiscal year 1984 to 1988 by appropriation, fiscal year, and line item (including spares). Indicate whether the data should/should not be printed in the record, in order to protect proprietary data.

Answer. ASPJ is now Development Testing (DT) at the Air Force Electronic Warfare Environment Simulator (AFEWES) in Ft Worth, Texas and the Air Force Armament Division Electromagnetic Test Environment (EMTE) range at Eglin AFB, FL. The Production Verification (PV) decision, based on successful completion of PV criteria for 44 ASPJ systems (22 AF/22 Navy), is scheduled for Oct-Nov 86. This will be a fixed-price incentive fee contract sole-sourced to the Joint Venture (JV) of ITT/Westinghouse. The Limited Production award, based on successful completion of all DT lab and flight testing, will be a fixed-price incentive fee contract sole-sourced to the JV but with a requirement for cross-manufacturing to be demonstrated through the last half of the contract quantities (total of 250). The full rate production award, based on successful completion of all operational testing, will be a firm fixed-price contract with dissolution of the Joint Venture and competition between ITT and Westinghouse for production quantities thereafter.

	FY 84	FY 85	FY 86	FY 87	FY 88
RDT&E (3600) 87 PB	42.2	25.0	5.0	10.1	0

PROCUREMENT (3010)

[Dollars in millions]

	FY 84	
	Budget	Required
Group A (BP1000)	1.0	1.0
Group B (BP1000)		
Support (BP1000)	68.2	68.2
Advance Buy (BP1000)	21.0	
Advance Buy Cr (BP1000)		
Subtotal	90.2	
Initial Spares (BP1600)		
Total	90.2	69.2

Adjustments:	
Advance buy ($21.0M) reallocated to support ALR-74/56 competition (Feb. 86)	**21.0**
Remaining balance:	
Support Equipment ($68.2M) will be used to update F-16 AIS to repair ASPJ at base level (negotiations ongoing, contract award anticipated on or about 1 Apr. 86); $1M Gp A on contract	**69.2**

	FY 85	
	Budget	Required
Group A (BP1000)	62.7	37.7
Group B (BP1000)	212.5	11.5
Support (BP1000)	5.9	
Advance Buy (BP1000)	19.5	
Advance Buy Cr (BP1000)	−21.0	
Subtotal	279.6	49.2
Initial Spares (BP1600)	52.7	
Total	332.3	49.2

Adjustments:	
Congressional CRA reduction (Dec. 85)	**237.8**
Reduced from ASPJ spares (Dec. 85)	**−52.7**
Reallocated from Peculiar Support Equipment	**29.0**
Gramm-Rudman-Hollings reduction (Feb. 86)	**−21.6**
Total adjustment	**−283.1**
Remaining balance:	
$37.7 for Gp A on contract and $11.5M Gp B for ASPJ production verification activities	**49.2**

	FY 86	
	Budget	Required
Group A (BP1000)	[1] 69.4	[1] 18.7
Racks (BP1000)		10.8
Group B (BP1000)	225.4	4.4
Support (BP1000)	6.3	
Advance Buy (BP1000)	23.9	
Advance Buy Cr (BP1000)	−19.5	

	FY 86	
	Budget	Required
Subtotal	305.5	33.9
Initial Spares (BP1600)	53.4	
Total	358.9	33.9

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[1] Starting in FY 86, as part of the F-16 multi-year procurement, all Group A except racks will be considered part of the airframe flyaway costs.

Adjustments:

Congressional CRA reduction (Dec. 85)	−169.0
Undistributed reduction (Jan. 86)	−7.0
Gramm-Rudman reduction (Feb. 86)	−95.6
Reduction from ASPJ initial spares (Dec. 85)	−53.4
Total adjustment	−325.0

Remaining balance:

$18.7M for Gp A activities with contract award anticipated in July/Aug. 86, $10.8M for racks with delivery schedule mated to F-16 Blk 30D and $4.4M set aside for ASPJ production verification activities	33.9

	FY 87	FY 88
Racks (BP 1000)	12.9	13.2
Group B Electronics (BP 1000)	48.3	256.9
QTY	22.0	195.0
Support (BP 1000)	4.7	19.5
Advance Buy (BP 1000)	30.4	24.8
Advance Buy Credit (BP 1000)	[1] (23.9)	(30.4)
Subtotal	96.3	284.0
Initial Spares (BP 1000)	35.8	32.2
Total	132.1	316.2

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[1] Advance buy withdrawn as a result of 86 Gramm-Rudman action.

All data can be printed for the record.

RADAR WARNING RECEIVER COMPETITION

Question. What is the status of Advanced Radar Warning Receiver (ALR-74/56M) competition in terms of milestones and contracts to date?

Answer. A contract was awarded to Litton Corp in Sep 85 for fabrication of 18 ALR-74 pre-production systems, and for the correction of deficiencies identified in operational testing. Design reviews were held in Nov 85 and Feb 86. The Air Force will begin to accept ALR-74 pre-production systems in Apr 86, however full-up ALR-74 hardware/software is not expected to be available until Mar 87 for start of competitive testing. A contract was awarded to Loral Corp in Oct 85 for repackaging of the F-15's ALR-56C into F-16 and F-4 form/fit factors and for long lead fabrication of 18 ALR-56M pre-production systems. A Preliminary Design Review was held in Jan 86 and a Critical Design Review is scheduled for May 86. Full-up ALR-56M hardware/software is not expected to be available until Apr 87 for start of competitive testing.

Question. Provide for the record a table showing all ALR-74/56M funds in each fiscal year 84-88 appropriation, fiscal year and line item.

Answer. The following table shows a record of ALR-74/56M funds (delta above ALR-69) for each fiscal year from 84-88. (pre-Gramm-Rudman-Hollings reductions):

	Fiscal year—				
	1984	1985	1986	1987	1988
F-16 Production (3010)	[1] 31.5	33.2	31.4	14.4	47.9
F-16 Adv Buy (3010)	0	0	0	23.3	19.6
F-4 (3010)	[2] 14.1	0	0	0	0
Spares	0	0	0	0	0

[1] Obligated on November 1985 Loral contract

[2] Obligated on September 1985 Litton contract.

Question. What is your current acquisition strategy, particularly in regards to second sourcing?

Answer. The prime competitors (Litton Corp for the ALR-74 and LORAL Corp for the ALR-56M) will be the responsible *system* house for their Radar Warning Receiver (RWR) system. They are responsible for obtaining second sources for each of the major Line Replaceable Units (LRUs). After the initial buys, they will compete with their second sources (by LRU) but they will still be the system house responsible for installed system performance, Engineering Change Proposals (ECPs), system software, etc. The advantage of second sourcing at the LRU level is that the AF can buy the LRU's at a lower cost. Contractor houses that build to specification don't have high engineering overhead typical of system houses, consequently their bids on LRU's don't reflect this overhead "wrap-around" charge. The end result is that their lower bids force the system houses to also lower their prices and the AF benefits from these truly competitive prices.

SPECIAL OPERATIONS FORCES

Question. Last year, the Committee was disappointed in discovering that Air Force readiness figures indicated that half of the Special Operations airlift force was not combat ready half the time. About the time the Committee planned to conduct a hearing on DoD special operations last year, the Air Force formed a special operations working group to review Air Force special operations force readiness. General Randolph, what were the major findings of the working group? How large a problem was determined to be caused by lack of equipment and spare parts? To what extent were Air Force management policies questioned?

Answer. The Air Force did conduct a major review of Special Operations Forces (SOF) readiness last year. Functional managers throughout the Air Staff examined all areas relating to Air Force SOF and developed programs to optimize SOF readiness. A major portion of our effort was centered on logistics where we believed the greatest opportunities existed to achieve optimum readiness from our existing SOF aircraft. We found a need to provide dedicated depot level logistics management support to SOF aircraft, and their unique subsystems. A SOF system program management organization has been established by the Air Force Logistics Command (AFLC) to provide focus on SOF aircraft logistics support requirements. Additionally, many SOF aircraft subsystems were determined to be minimally supportable and experience poor reliability. Consequently, additional SOF aircraft subsystem enhancements have been budgeted to complement on-going reliability improvement initiatives. We did discover a significant problem in spare parts availability due to problems in recycling items through the repair process; however, we did not find any evidence of support equipment inadequacies. Aggressive corrective action has been applied to improve support for critical spares assets. Management policies were also examined and the newly formed AFLC system program management organization provides the needed response to immediate concerns. We are confident our actions to date will lead to significant SOF readiness improvements.

Question. We understand the group's report indicated that "fleet wide problems are a direct result of underfunding C–130 and helicopter spares in the early eighties". Dr. Cooper, since Congress provided practically all the spares funding requested during the early eighties, how could such shortages have occurred?

Answer. Because of fiscal constraints, our budget requests do not always represent our total requirement. As a result, our spares shortages with the C–130 and helicopters have resulted in large part from prior year funding shortfalls. It's important to recognize that, as depicted below, strong spares funding is only a relative recent phenomenon:

[Percent of requirement funded]

Fiscal year:	
1980	24
1981	53
1982	58
1983	51
1984	74
1985	100

Moreover, within these overall funding percentages, C–130 helicopters have been funded as follows:

HELICOPTERS

[In percent]

	C–130	H–60
Fiscal year:		
1980	29	29
1981	33	25
1982	50	75
1983	40	65
1984	70	90
1985	100	100

With a two year average leadtime, the healthy funding in FY84 and FY85 will not produce parts on the shelf until FY86/87.

Nevertheless, future support is bright. Spares bought in FY84–FY85 are in the pipeline. Meanwhile, the Air Force has made SOF a top spares funding priority and the FY87 President's Budget funds all SOF requirements. We are committed to providing the logistical support necessary to robust this important mission.

Question. General Randolph, when will the last of the programmed MC-130H aircraft be delivered?

a. Has the date slipped?

b. Please explain why a fiscal year 1986 reprogramming for the MC-130H will be submitted this year.

c. What percentage of wartime mission requirements can the current Air Force force structure accomplish, without augmenting forces?

[CLERK'S NOTE.—The Department's response was provided too late to be printed in this hearing volume.]

Question. What is the "minimum risk" force of MC-130H aircraft identified by theater commanders? the "prudent risk" force? What do "minimum risk" and "prudent risk" mean in this context?

Answer. The minimum risk force of MC-130H is an internal Service and JCS working concept and therefore, not releasable. It is inappropriate to discuss the minimum risk force of MC-130s in isolation from the forces they support. As part of the Joint Strategic Planning System, minimum risk forces are the CINCs recommended force level required to achieve the US strategy and assigned tasks in their regions against the estimated minimum level of Soviet capabilities at the end of the mid-range planning period, (10 years from now). The CINCs minimum risk forces are solely military regional requirements unhampered by fiscal constraints or consideration of global factors such as prioritizing missions, sequencing force employment, eliminating double counting of the Soviet capability, refining force requirements via war-gaming, and accepting increased risk. Therefore, the minimum risk forces are not directly part of the equation in the development of Service programs. The term "prudent risk" force is not used or defined in the JCS force development process. The four force levels applicable are minimum risk force, planning force, program force, and current force. The planning force is defined as having a "reasonable assurance of of success" and is the next level of increased risk compared to the minimum risk force. Force planners within the Services and CINCs may use additional terminology for internal use only.

Question. How do Air Force MC-130H procurement plans compare to the minimum risk requirements?

Answer. MC-130 procurement is based on programmed special operations ground force requirements and not on the theater minimum risk force. This results in a MC-130H procurement requirement smaller than the minimum risk force but adequate to support special operations ground forces.

AC-135

Question. Please explain the status of the AC-130H special operations/drug interdiction aircraft procurement directed and funded by Congress in the fiscal year 1986 Continuing Resolution. What do you intend to do with the funds?

Answer. The JCS is currently conducting an analysis of how DOD can best support the Congressional initiatives to curtail the flow of illegal drug smuggling across our borders. Additionally, the Air Force has formed a task force to determine what airborne radar platforms could most effectively support civilian law enforcement agencies' interdiction efforts. Resolution is expected NLT 31 Mar. 86.

Question. Do MC-130 WRSK kits for spares include specialized mission equipment? Provide statistics for the record indicating MC-130 WRSK kit and specialized mission requirements by installation, comparing requirements to assets on hand.

Answer. MC-130 War Readiness Spares Kits (WRSKs) do include specialized mission equipment. Peculiar "TALON" support items currently authorized/on-hand in the MC-130 WRSKs follow: ——— In addition to "FB" (base supply support) accounts, MC-130 aircraft also receive support from "FX" (miscellaneous) accounts. "FX" units authorized/on-hand total. ———.

Question. We understand the Air Force Scientific Advisory Board in a July, 1985 report urged immediate action to ensure that commonality is achieved in the four independently managed Air Force SOF aircraft upgrades currently underway. How has the Air Force responded?

Answer. The Air Force concurs with the Scientific Advisory Board's recommendation and we are taking action to implement commonality where possible. USAF directives on SOF modification and acquisition programs contain the phrase: "commonality to other special operations forces (SOF) aircraft systems (MH-53H/J PAVE LOW III, AC-13OH, and MC-13OE/H) will be maintained to the maximum extent possible." The following table indicates the success this policy has had in achieving subsystem commonality in our four SOF programs:

Programs	Radar warning receiver	Infrared countermeasures	Panoramic receiver	Flare and chaff dispenser
MH-53J	Same	Same	Not Installed [1]	Same
MC-130H	Same	Same	Same	Same
MC-130E	Same	Same	Same	Same
AC-130H	Same	Same	Same	Same

	Jammer	Mission computer	Digital data burst	Encryption devices
MH-53J	Different [2]	TBD [4]	Same	Same
MC130H	Same	Different	Same	Same
MC-130E	Same	Same	Same	Same
AC-130H	Different [3]	Same	Same	Same

	Common module FLIR	F^3 Inertial NAV system	UHF/VHF/FM radios	Radar
MH-53J	Same	Same	Same	Different
MC-130H	Same	Same	Same	Different
MC-130E	Same	Same	Same	Different
AC-130H	Same	Same	Same	Different

[1] Capability not required.

[2] AC/MC-130 jamming system not designed for a helicopter.

[3] Not programmed for the AC-130H.

[4] MH-53 mission computer has not yet been determined but commonality with either the MC-130H or MC/AC-130 mod programs is likely.

As the table shows, the only major subsystem not common is the radar. With the exception of the MC-13OH Combat Talon II program, none of the other aircraft have ongoing upgrades to the radar. Pending the outcome of the flight test on the new Combat

Talon II radar, the Air Force will evaluate the possibility of outfitting the SOF fleet with a common radar. However, due to different operational requirements on the AC-130 and weight and space contraints on the helicopters, one radar system may not satisfy all SOF aircraft requirements.

Question. When will the Air Force SOF Master Plan be revised and how will the proposed transfer of rotary SOF to the Army be treated?

Answer. The Air Force SOF Master Plan is scheduled for revision by 31 Jul 86. Actions are already well underway to meet this completion date. The Air Staff and Army Staff are developing their plans in concert to achieve complementary programs, including rotary requirements.

INFLATION

Question. The Congress made significant reductions to DoD procurement appropriations in fiscal year 1986 due to inappropriate inflation methodology. Specifically, use of a "130 percent of GNP" inflation factor for selected procurement systems was not allowed. A recent GAO audit confirms that use of the 1.3 multiplier is not justified. What instructions were provided to the Air Force concerning use of 1.3 multiplier for weapon system inflation for use in preparation of the fiscal year 1987 budget request to Congress?

Answer. OSD provided standard rates for the Air Force to use for computing weapon system procurement inflation. These rates must be used by the Air Force. None of the fiscal year 1987 outlay inflation rates used for weapon system procurement in the fiscal year 1987 budget included the additional 30 percent for inflation.

Question. Did the Air Force eliminate use of the multiplier in FY 1987?

Answer. The multiplier was eliminated from all fiscal year 1987 outlay inflation rates used by the Air Force.

Question. How did the Air Force treat the multiplier in the outyears? If treated differently, what is the logic of assuming the multiplier to be invalid in FY 1987, but perfectly valid in subsequent years?

Answer. The major commodity procurement (Aircraft and Missile Procurement Appropriations) inflation rate used in the fiscal year 1987 budget for pricing the outyears did include the multiplier. Subsequently, it was determined that we would not support the use of a multiplier at this time. New inflation indices were developed without the multiplier, and outyear funding has been adjusted to remove the associated inflation dollars from the baseline for the Air Force POM. In addition, the 31 Dec 85 Air Force Selected Acquisition Reports (SARs) are being repriced to remove the dollars associated with the multiplier from the outyears of these programs.

Question. Separately provide for each fiscal year 1987 to 1991 the inflation rates, outlay rates, and composite rates used by the Air Force for preparation of the FY 1987 budget to Congress in each Air Force procurement appropriation.

Answer:

AIRCRAFT PROCUREMENT

	FY 1987 budget inflation rates		Revised outlay inflation rates (percent) [1]
	Outlay rates (percent)	Composite rates (percent)	
Fiscal Year:			
1987	4.1	4.3	4.1
1988	5.1	3.9	3.9
1989	4.4	3.5	3.4
1990	3.8	3.1	2.9
1991	3.0	3.0	2.3

[1] See answer to preceding question.

Outlay rates used for all years: First Year: 7.98 percent, Second Year: 36.17 percent, Third Year: 27.13 percent, Fourth Year: 13.83 percent, Fifth Year: 14.89 percent.

MISSILE PROCUREMENT

	FY 1987 budget inflation rates		Revised outlay inflation rates (percent) [1], [2]
	Outlay rates (percent)	Composite rates (percent)	
Fiscal Year:			
1987	4.1	4.4	4.1
1988	5.1	4.0	3.9
1989	4.4	3.4	3.4
1990	3.8	3.2	2.9
1991	3.0	3.0	2.3

[1] See answer to preceding question.
[2] Special programs outlay at a faster rate.

Outlay rates used for all years: First Year: 11.58 percent, Second Year: 32.84 percent, Third Year: 36.46 percent, Fourth Year: 15.43 percent, Fifth Year: 3.69 percent.

OTHER PROCUREMENT

	FY 1987 budget inflation rates		Revised outlay inflation rates (percent) [1], [2]
	Outlay rates (percent)	Composite rates (percent)	
Fiscal Year:			
1987	4.1	3.6	4.1
1988	3.9	3.1	3.9
1989	3.4	2.7	3.4
1990	2.9	2.4	2.9
1991	2.3	2.3	2.3

[1] See answer to preceding question; the other Procurement Appropriation rates did not change since they have never included a multiplier assumption.
[2] Special programs outlay at a faster rate.

Outlay rates used for all years: First Year: 16.04 percent, Second Year: 32.09 percent, Third Year: 31.02 percent, Fourth Year: 14.97 percent, Fifth Year: 5.88 percent.

Question. Provide for the record a table by appropriation and line item showing the effect on your FY 1987 budget request if the 1.3 multiplier had been properly eliminated in the outyears.

Answer. The methodology used to determine the impact on total obligation authority (TOA) of outlay inflation rate changes or outlay pattern changes is to calculate the ratio of the resultant new composite index to the old composite index. Previous TOA multiplied by this factor equals the new TOA requirement. After the outlay inflation rates were revised by OSD on 19 Feb. 86 including the removal of the 1.3 multiplier in the outyears, the ratio of the new to old composite index for fiscal year 1987 for each appropriation was as follows:

FISCAL YEAR 1987

Appropriation	Ratio	Dollar impact (millions)
Aircraft procurement	.9945	−$105.2
Missile procurement	.9987	−11.7
All Other	1.0000	0

Question. Requests for B–1B procurement appropriations were overstated by $280 million as a result of using an improper method to inflate the advance buy amounts, according to a recent HAC S&I investigation. When the Air Force discovered this it ordered changes to the methodology to correct it, but decided to keep the extra B–1B funding rather than return it. What is your rationale for this decision? What other weapon systems were affected? What changes were made in the FY 1987 budget to eliminate this defective methodology?

Answer. The Air Force discovered this situation itself and took corrective action prior to the FY 1986 budget. Both the FY 1986 and FY 1987 budgets were computed correctly. A full disclosure of the dollar impact of the change and the decision to increase base-year dollars when making the correction was included in the December 31, 1984 Selected Acquisition Reports (SARs). The rationale for making the change as an increase to base-year dollars follows:

a. A significant portion of the dollar adjustments was related to prior historical years and, therefore, had no current funding implications.

b. The appropriate then-year to base-year relationship was unknown since it had been distorted over time by use of an incorrect process. Therefore, it should not necessarily be inferred that then-year dollars were overstated.

c. As a quid pro quo for allowing the change in methodology as an adjustment to base-year dollars, programs absorbed a one percent inflation rate increase that affected fiscal year 1983 and beyond. They also absorbed a subsequent outlay pattern stretchout with approximately a one to one and a half percent impact for fiscal year 1984 and beyond with no added funding. These were both in addition to inflation reductions (and other funding reductions for the B–1B) made by the Congress. These impacts affected total program funding, whereas the incorrect procedure affected only advance procurement funding. Therefore, the impact generally was much larger.

The impact of the one-percent procurement inflation rate change absorbed by the B-1B and other historical inflation increases between January 1984 and January 1985 amounted to $324 million in fiscal year 1981 (base year) dollars and $465 million in then-year dollars (both identified in the December 31, 1984 SAR). The subsequent outlay pattern stretchout that was unfunded further reduced fiscal year 1981 dollars by $217 million.

Other weapon systems affected significantly by the change in methodology were: C-5B, C-17A, F-16, KC-10A and T-46A. As stated above the method of computing inflation on programs with advance buy funding was corrected prior to the FY 1986 budget. Therefore, the inflation presented in the FY 1987 budget has been calculated correctly.

ENGINES

Question. In each of the last four fiscal years, the amounts requested for fighter aircraft engines have exceeded the amounts required for their contracts, often by significant amounts. For fiscal years 1985, 1986, and 1987, please compare the amounts contained in the current budget, including spares, to the contract requirements that are presently known by the Air Force. Explain significant differences. How has the recent Secretarial decision concerning the FY 1987 "split" been considered in the previous answer?

Answer. Tables I and II provide the install engine recurring costs for fiscal year 1985 by weapon system. Also shown are spare engines (plus modules) bought with the FY 1985 install engine buy, but budgeted in FY 1984 under the full funding concept. The install engine unit price includes funds for field service representatives and technical orders. Fiscal years 1986 and 1987 are currently being prepared and will be available in mid-April.

TABLE I

F-15

		($ Millions)	
	Quantity	Unit Cost	Total Cost
INSTALLS			
Budget (P-5 Exhibit)	84	3.175	266.70
Actual Contract			
F100-PW-100	6	2.72	16.30
F100-PW-220	78	3.00	234.00
Termination Liability (Switch from -100 to -220 engines for wing integrity at Eglin AFB)			14.40
Other			.20
Total Requirement			264.90
Delta (Actual to Budget)			- 1.80
SPARES			
Budget			
F100-PW-100	18	2.10	37.80
Modules			
Inlet	2	.21	.42
Core	2	.75	1.50
Turbine	2	.25	.50
Augmentor	32	.35	11.20
Gearbox	4	.05	.20
Total Budget (-100)			51.62
F100-PW-220	11	2.91	32.01
(No Modules)			
Actual Contract			
F100-PW-100	18	2.45	44.10
Modules			
Inlet Fan	2	.26	.52
Core	2	.85	1.70
Turbine	2	.18	.36
Augmentor	32	.32	10.24
Gearbox	4	.06	.24
Total Requirement (-100)			57.16
F100-PW-220	11	2.91	32.01
Delta (Actual to Budget)			
F100-PW-100			+5.54
F100-PW-220			0.00

TABLE II

F-16

		($ Millions)	
	Quantity	Unit Cost	Total Cost
INSTALLS			
Budget (P-5 Exhibit)	150	3.39	508.50
Actual Contract			
F100-PW-200	40	2.81	112.40
F110-GE-100	110	3.50	385.00
Other			5.50
Total Requirement			502.90
DELTA (Actual to Budget)			-5.60
SPARES			
Budget			
F100-PW-200	11	3.28	36.08
Modules			
Augmentor	1	.36	.36
Gearbox	6	.04	.24
Total Budget (-200)			36.68
F110-GE-100	12	3.42	41.04
Actual Contract			
F100-PW-200	11	2.74	30.14
Modules			
Augmentor	1	.32	.32
Gearbox	6	.06	.36
Total Requirement (-200)			30.82
F110-GE-100	12	3.42	41.04
DELTA (Actual to Budget)			
F100-PW-200			-6.54
F110-GE-100			0.00

Question. The Air Force claims to have achieved billions of dollars of savings from the fighter engine competition. Are any of these savings reflected in formal budgets to Congress, particularly in the O&M account?

Answer. Through the FY 86 President's Budget, the formal budgets submitted to Congress have reflected Air Force Systems Command acquisition savings in excess of $670 million. These savings were generated by the fighter engine competition up to the most recent FY 87 Secretarial Decision. No significant O&M, savings are reflected in the FY 1987 Budget. Cost savings are expected, however, starting in late FY 1989 when the first fighter competition engines experience sufficient use to require scheduled major maintenance actions at organizational and intermediate and depot levels.

[CLERK'S NOTE.—End of questions submitted for the record.]

Mr. CHAPPELL. The committee is adjourned until 1:30.

[CLERK'S NOTE.—The joint statement, referred to on page 12, follows:]

Air Force Acquisition Statement

FY87

AIRCRAFT PROCUREMENT
MISSILE PROCUREMENT
RESEARCH, DEVELOPMENT TEST AND EVALUATION

PRESENTED TO THE 99TH CONGRESS BY

The Honorable Thomas E. Cooper
The Assistant Secretary of the Air Force
Research, Development and Logistics

Lt General Bernard P. Randolph
Deputy Chief of Staff
Research, Development and Acquisition
Hq United States Air Force

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON, D.C.

MEMBERS OF CONGRESS

Over the past few years, we in the Air Force, with your support, have been able to make significant improvements in our forces. As a result, these forces are now better equipped, more capable, and at their highest peacetime readiness levels than at any time over the past decade. Our Fiscal Year 1987 budget supports these improvements. Moreover, our improved acquisition process will ensure that we make the best possible use of public funds we now request.

Though economic influences on our budget may change from time-to-time, the threat does not. The Soviets continue their unrelenting military growth, and the potential for low-level conflict which may involve the United States steadily increases. This is clearly not the time to reduce the momentum of our force modernization.

Air Force priorities--strategic force modernization; improved readiness and sustainability of our general purpose forces; increased airlift capability and modernized and expanded tactical forces; and improved capabilities in space--are formulated to best support our national military strategy. This budget is a well-balanced approach to achieving required growth in each of these areas.

We support our national commitment to a balanced federal budget. Our greatest contribution to this goal will be a careful stewardship of the resources entrusted to us. We have reduced the number of programs we manage, we have made great progress in increasing competition in our acquisition programs, and are actively pursuing other cost reduction measures. Further, we are aggressively participating in joint service acquisition programs and actively seeking cooperation with our NATO and other allies to reduce costly duplication of effort. In sum, we are working hard to do more with less.

We look forward to discussing our programs with you and request your support of our Fiscal Year 1987 budget.

Thomas E Cooper

THOMAS E. COOPER
Assistant Secretary of the Air Force
Research, Development and Logistics

BERNARD P. RANDOLPH, Lt Gen, USAF
Deputy Chief of Staff,
Research, Development and Acquisition

Biography

United States Air Force

Secretary of the Air Force, Office of Public Affairs, Washington, D.C. 20330

DR. THOMAS E. COOPER

Dr. Thomas E. Cooper is assistant secretary of the Air Force for research, development and logistics, Washington, D.C. He is responsible for conceptual efforts on major new programs and for formulating, reviewing and executing the plans, policies and programs related to research and development, logistics and acquisition. His responsibilities span all major mission areas, including assigned space programs. He also serves as the Air Force acquisition executive. Dr. Cooper assumed his present duties in January 1983.

Dr. Cooper was born May 31, 1943, in Lindsay, Calif. From 1961 to 1970, he attended the University of California at Berkeley where he received a bachelor's degree (with honors) in engineering-mathematics, and master's and doctorate degrees in mechanical engineering.

Following graduation Dr. Cooper was an acting assistant professor of mechanical engineering at the University of California, Berkeley, from 1970 to 1971. In 1971 he joined the faculty of the Mechanical Engineering Department at the Naval Postgraduate School, Monterey, Calif., and was promoted to associate professor in 1974. In 1975 he was awarded academic tenure and the school's John Schieffelin medallion for excellence in teaching.

Chosen to be a Congressional Science Fellow during 1976, Dr. Cooper spent the year serving on the professional staff of the Committee on Armed Services, U.S. House of Representatives. Following his fellowship year Dr. Cooper was appointed as a professional staff member on the Armed Services Committee.

During his tenure on the Armed Services Committee, Dr. Cooper worked on a wide range of research, development and acquisition issues, dealing with both strategic and tactical programs, and with all areas of basic and applied research funded through the Department of Defense. In addition he handled all intelligence-related military programs and was the committee's liaison at the staff level with the House Permanent Select Committee on Intelligence. He also had responsibility for space programs and command, control and communications issues. Dr. Cooper served as the principal staff member to the Defense Industrial Base Panel of the Armed Services Committee that highlighted many of the fundamental problems in the industrial base and played a major role in drafting legislation relating to multiyear contracting.

Dr. Cooper has also worked for Procter & Gamble Co., Aerojet General Corporation, the California State Division of Highways, and has served as an engineering consultant to the Lawrence Radiation Laboratory, Livermore, Calif.; the Naval Weapons Center, China Lake, Calif.; and the Naval Weapons Laboratory, Dahlgren, Va.

He is a member of the American Society of Mechanical Engineers, Sigma Xi, North American Research Society and Tau Beta Pi. In 1975 he was chosen as one of the "Outstanding Young Men in America", is listed in American Men of Science and Who's Who in the West, and is a graduate of Harvard's program on National and International Security Affairs.

Dr. Cooper and his wife Helen reside in Alexandria, Va. They have a daughter, Nicole.

Biography
United States Air Force
Secretary of the Air Force, Office of Public Affairs, Washington, D.C. 20330

LIEUTENANT GENERAL BERNARD P. RANDOLPH

Lieutenant General Bernard P. Randolph is deputy chief of staff for research, development and acquisition, Headquarters U.S. Air Force, Washington, D.C. He is responsible to the U.S. Air Force chief of staff for all U.S. Air Force research, development and acquisition programs.

General Randolph was born in New Orleans. He received a bachelor of science degree in chemistry from Xavier University of Louisiana, New Orleans. General Randolph earned bachelor (magna cum laude) and master of science degrees in electrical engineering from the University of North Dakota, Grand Forks, through the Air Force Institute of Technology program in 1964 and 1965, respectively. He completed Squadron Officer School in 1959; Air Command and Staff College as a distinguished graduate, concurrently earning a master's degree in business administration from Auburn (Ala.) University in 1969; and was a distinguished graduate of the Air War College in 1974, all at Maxwell Air Force Base, Ala.

His first assignment after completing aviation cadet training at Ellington Air Force Base, Texas, and Mather Air Force Base, Calif., was with the Strategic Air Command at Lincoln Air Force Base, Neb., from June 1956 to June 1962. He instructed and evaluated KC-97 and B-47 flight crews. While there he was a member of a select crew.

General Randolph attended the University of North Dakota until July 1965 and was then assigned to Los Angeles Air Force Station, Calif., as chief, on-orbit operations, Space Systems Division. He was next assigned as assistant deputy program director for launch and orbital operations and was responsible for all payload operations.

From August 1968 to October 1969, General Randolph attended Air Command and Staff College and Auburn University. He was then assigned to the Republic of Vietnam, as an airlift operations officer at Chu Lai and airlift coordinator at Tan Son Nhut Air Base. He was responsible for the total operation of about 50 C-7 and C-123 airlift sorties daily from Chu Lai and later coordinated the operations of all airlift control elements throughout the Republic of Vietnam.

Upon his return to the United States in November 1970, General Randolph was assigned to Headquarters Air Force Systems Command, Andrews Air Force Base, Md., as chief of command plans in test evaluation, and then as the executive officer to the deputy chief of staff for operations. He attended the Air War College, from August 1973 to June 1974.

Following graduation General Randolph returned to Los Angeles Air Force Station as director, space systems planning for the Space and Missile Systems Organization. In April 1975 he became deputy program director and later program director for the Air Force Satellite Communications System. He assumed responsibility for space defense systems at Space Division headquarters, Los Angeles Air Force Station in March 1978. In this capacity he managed a program to design and develop the United States anti-satellite system with its supporting surveillance, command and control, and survivability aspects.

From July 1980 to September 1981, the general served as vice commander of the Warner Robins Air Logistics Center, Robins Air Force Base, Ga. He then became director of space systems and command, control and communications, Office of the Deputy Chief of Staff, Research, Development and Acquisition, Headquarters U.S. Air Force. General Randolph returned again to Los Angeles Air Force Station as vice commander and deputy commander for space systems acquisition for Space Division in May 1983. In June 1984 he became vice commander of Air Force Systems Command, Andrews Air Force Base. He assumed his present duties in May 1985.

General Randolph's military decorations and awards include the Distinguished Service Medal, Legion of Merit with one oak leaf cluster, Bronze Star Medal, Meritorious Service Medal, Air Force Commendation Medal and Presidential Unit Citation Emblem.

He was promoted to lieutenant general June 28, 1984, with same date of rank.

General Randolph is married to the former Lucille Robinson of New Orleans. They have six children: Michelle, Julie, Michael, John, Liane and Mark.

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DEPARTMENT OF THE AIR FORCE
MCMXLVII
UNITED STATES OF AMERICA

EXECUTIVE SUMMARY

The U.S. Armed Forces protect and preserve the United States as a free nation. U.S. forces help assure the physical security of the United States as a democracy and protect U.S. interests abroad. The basic military strategy of the United States is the deterrence of war by making a potential aggressor unwilling to take the risk of starting a conflict. The security interests of the United States and its allies continue to be challenged by the sustained growth and improved performance of Soviet military forces, Eastern bloc, and surrogate exploitation of regional conflicts, and instabilities in many areas of the world.

The Soviets continue to increase and modernize their nuclear and conventional forces as well as their capabilities for projecting military power. Together with surrogates, they are attempting to weaken the ties between the United States and its allies and extend their influence in the Third World. Soviet military interventions further impede the peaceful resolution of Third World problems and contribute to regional instability by promoting wider conflict.

U.S. military strategy seeks to deter attacks against the United States and its allies, limit Soviet opportunities for coercion, and provide the flexibility to respond appropriately to aggression and terrorism . Therefore, U.S. forces must be capable of operating effectively throughout a spectrum extending from low-intensity conflict to strategic nuclear war. Readiness, sustainability, modernization, and a sound force structure are imperatives of the U. S. military posture.

Through the President's commitment to long-term defense modernization, our forces have reached a higher peacetime level of effectiveness than at any other time. When the President first came into office, he was faced with ten previous years of U.S. military decline while the threat was continually increasing. During the past five years, real growth in our military investment accounts (procurement, research, development, test and evaluation, and military construction) has resulted in the modernization of our equipment and a simultaneous increase in our readiness and sustainability for support of larger forces in the U.S and overseas.

Because of the steady rebuilding of our military capability, our strategic forces have become more capable and survivable; our tactical aircraft mission capable rates and wartime fighter sortie generation capability have drastically improved;our strategic airlift fleet has increased; and our command, control and communications have become faster and more survivable. All of these improvements to our force structure enable the U.S. military to better carry out the national security policy of protecting and defending American interests throughout the world.

The Fiscal Year 1987 investment in research, development, test and evaluation, procurement and military construction provides the future force structure capability to meet our national security objectives. The Fiscal Year 1987 investment programs account for 56% of the entire AF budget request. We feel this mix represents the most reasonable balance between operating our forces at a high level of readiness and investing in the development of future weapon system capabilities.

EXECUTIVE SUMMARY

Our qualitative edge over the Soviets has been narrowing due to the large Soviet expenditures in science and technology and an intense program to acquire our latest weapons technology. Given our strategy to counter the large quantities of Soviet weapons with our technologically superior weapons, we must continue and increase a broad-based scientific and technology program across all mission areas. We cannot wait until the Soviets further close the technology gap because of the long lead-time required to field weapon systems utilizing new technologies. Further, we must shorten the development cycle for technologies which promise a high payoff in countering the projected threat.

To transition our science and technology efforts into development and production, we require a sound industrial base that can operate in both peace and wartime. Today's industrial base for producing defense equipment consists of privately-owned and government-owned facilities. The Air Force's Industrial Base Program analyzes current industry capabilities in light of acquisition programs and develops goals that tie industrial productivity enhancements to wartime responsiveness.

We must also improve readiness and sustainability despite increased weapon system performance and complexity. Our aircraft have to be able to deploy quickly to austere bases, and sustain high combat sortie rates. To accomplish these demanding requirements, the Air Force's Reliability and Maintainability (R&M) 2000 program is designed to accelerate R&M efforts in both fielded and new weapon systems. The two research and development programs that offer high payoffs are the R&M Maturation and Technology Insertion Program, and the Productivity, Reliability, Availability, Maintainability Program.

To develop a large array of sophisticated yet reliable and maintainable weapon systems within a period of austere resources, we must continue our efforts to improve our stewardship of the defense dollars allotted to us. We have instituted several acquisition management enhancement programs that are intended to reduce the cost of weapon systems, improve the spare parts acquisition cycle, create a top notch professional acquisition staff, and encourage a greater cooperation with our NATO partners in developing and acquiring weapon systems. Through these and other programs, we feel we can better manage the limited funds available for Air Force programs.

Our development programs and production lines can lead to improved war-fighting capability only if our forces are trained and ready to use this modern equipment, our peacetime stocks can support day-to-day operations and training, and we have the necessary repair facilities, spare parts, and consumables to sustain our combat forces. To improve our aircrew training, we have a full array of aircraft simulators that complement actual flight time, enhance combat capability, and improve safety. Results of recent aircrew combat competitions show that our pilot wartime proficiencies have reached their highest peacetime levels in years. Our readiness has also improved with the increased emphasis placed on our peacetime spares procurement. We have kept up our commitment to funding both the initial spares needed to support new weapon systems and the replenishment spares necessary to support operations and training programs. While revised fiscal guidance has impacted our war reserve stock procurements, we are still able to fund all new wartime kit authorizations for our fighting units.

EXECUTIVE SUMMARY

The fundamental objective of U. S. nuclear forces is to remove all incentives for direct attack against the United States and its allies by promising any attacker a devastating outcome. The Soviet Union has continued to challenge the U.S. guarantee of effective retaliation and has threatened U.S. deterrent capabilities by strengthening certain measures of Soviet nuclear strength. To counter growing Soviet nuclear war-fighting potential, the United States gives high priority to the modernization of its nuclear forces and the study of means for defending against ballistic missile attack. Equitable and verifiable arms reduction agreements are being pursued in parallel with modernization programs. The goal of the United States is a more stable nuclear balance at lower levels of armament.

The United States' strategic nuclear forces are composed of sea-launched ballistic missiles, land-based ICBMs, and manned bombers. These forces, known as the Triad, represent our nation's resolve to deter any potential aggressor. The structure of the Triad discourages a first strike against the United States by complicating Soviet efforts to defend against this retaliatory mix of forces.

The ability to deter aggression exists only if we have the actual capability and will to retaliate. Since the Air Force is responsible for maintaining two-thirds of the Triad, the land-based ICBMs and the manned bomber, we have continued to seek modernization in both of these areas. We are modernizing our ICBM force through the upgrade of the Minuteman missile, the procurement of the Peacekeeper missile, development of a small mobile missile, and research on technologies to increase the survivability of our ICBM force. In addition, we have upgraded some of our B-52 systems to extend their lifetime and enhance their delivery capability. The B-52, through these improvements, provides an overlap until the Air Force's newest bomber, the B-1B, takes over the penetration role. To meet the expected advances in Soviet defenses, we are continuing the development of the Advanced Technology Bomber and both penetration and standoff missiles. With this new bomber and missile force mix, our bomber leg of the Triad will remain a credible deterrent to nuclear aggression well beyond the year 2000.

Strategic Defense encompasses detection of Soviet aircraft and missile attack, monitoring space activities, and defense against atmospheric and space-based threats to U.S. forces. These resources reduce the probability of a successful enemy's decapitating first strike attack, thus increasing stability between the United States and the Soviet Union.

Atmospheric surveillance and defense are responsible for the protection of North America against the air breathing threat. In Fiscal Year 1987, we will continue replacing the aging Distant Early Warning System with the new North Warning System to provide improved surveillance of the northern approaches. For coastal surveillance, we will continue procurement of the Over-the-Horizon Backscatter Radar. To ensure an effective interceptor force at lowest cost, the Air Force is holding a competition for approximately 300 new interceptors.

For space surveillance and defense, we are instituting several improvements to the SPACETRACK system, continuing space defense system tests, and improving space defense command, control and support programs.

Ballistic Missile Warning and Attacks Assessment is currently performed by a network of sensors. In Fiscal Year 1987, two new PAVE PAWS sites will be completed. These systems will provide coverage of the southeast and southwest sectors to complete 360 degree surveillance against Submarine-launched Ballistic Missiles. The Ballistic Missile Early Warning System will be upgraded by completing the replacement of 20-year old conventional radars at Thule Air Base, Greenland.

Finally, the Strategic Defense Initiative is exploring the potential of a system to counter ballistic missiles and their re-entry vehicles in flight. In Fiscal Year 1987, the Strategic Defense Initiative will continue funding five technology development areas: surveillance, acquisition, tracking and kill assessment; kinetic energy weapons; directed energy weapons; battle management/command, control, communications; and system analysis and supporting technology.

Without our Strategic Command, Control and Communication (C^3) systems, our strategic offensive and defensive weapon systems will not provide a credible deterrent against Soviet first strike. Our Strategic C^3 systems link our attack warning, defensive, and strategic retaliatory forces to command centers. They must be effective and reliable in the pre-, trans-, and post attack environment. Our current systems are being upgraded to become more survivable, and new systems are being produced and deployed to provide increased capability. In Fiscal Year 1987, the Air Force will continue development of the Milstar secure, jam-resistant communications system, the Ground Wave Emergency Network, the Minimum Essential Emergency Communications Network, and the Worldwide Military Command and Control Information System. We will continue production of Strategic Air Command Digital Network terminals and the Defense Satellite Communications System III satellites. Fiscal Year 1987 system upgrades will include the Aircraft Alerting Communications Electromagnetic Pulse Upgrade and the modifications to the EC-135 Post Attack Command and Control System and E-4B command post aircraft.

Space systems significantly increase the combat effectiveness of our strategic and conventional forces. The Soviets have recognized the importance of space in military operations and have made great strides in improving their space-based assets. We also have instituted programs to upgrade our space infrastructure of launch and on-orbit facilities, increase the survivability of our space systems, and improve the surveillance, communications, and navigation capabilities of our space systems. Infrastructure upgrades will include: upgrading the Titan 34D to launch shuttle-size satellites; upgrading the Titan II ICBM into a space launch vehicle for smaller satellites; upgrading the Satellite Control Facility data systems computers; and continuing the development and acquisition of the Advanced Remote Tracking Station. Improved performance and survivability of our space systems will be accomplished through: continued development of the Defense Meteorological Satellite and its ground command, control and communication network; continued procurement of improved Navstar Global Positioning System satellites and continued development and test of the Nuclear Detonation Detection System user terminals along with acquisition of the operational satellite segment.

Our theater forces still remain a key deterrent to aggression by the Soviet Union and her allies. The numerical advantage enjoyed by the Warsaw Pact has become even more ominous with the introduction of many Soviet technical advances in avionics, aerodynamics, and propulsion systems. To meet this ever increasing qualitative and quantitative threat, we are continuing our modernization programs in tactical aircraft; air-to-air missiles, air-to-ground munitions/missiles; battlefield management command, control, and communication (C^3) systems; defense suppression and electronic combat measures; theater nuclear capability; and chemical warfare protective systems and retaliatory weapons. We realize the importance of obtaining a balanced mix of offensive weapons, defense suppression weapons, C^3 and intelligence fusion information, and nuclear/chemical capability. The Fiscal Year 1987 budget request is designed to accomplish that mix without sacrificing the importance of readiness and sustainability.

Force projection is vital to our ability to deter aggression by displaying our readiness to use the correct force at the right time and the right place. Our three key elements of force projection are airlift, refueling, and special operations forces. Air Force airlift operates in conjunction with sealift and prepositioned war materials to provide the link between force structure and combat capability. With the final procurement of 21 C-5Bs in Fiscal Year 1987, we will have completed the major portion of our near-term airlift modernization that started in 1983. For our long-term requirements, we will complete full scale engineering development of the C-17 multirole airlifter in preparation for a 1988 production start. We will also begin the development and acquisition of two Air Force One replacement aircraft whose need was recognized by the last Congress. To complement our airlift leg of force projection, we have significantly increased our refueling aircraft fleet to support tactical as well as strategic readiness. In Fiscal Year 1987, we will complete our planned 60 KC-10 fleet with the purchase of eight aircraft and will continue the annual production of KC-135R re-engine kits to provide a 50% fuel availability increase to our primary strategic airlifters. To meet the threat of low level conflict, especially that posed by increased terrorist activity, we have started acquisition of additional MC-130H and AC-130H aircraft to supply airlift and accurate fire power in support of our special operations forces.

Supporting the development and production of our weapon systems requires extensive test and evaluation facilities. With the increased emphasis on testing, we plan to conduct several test range modernization and improvement efforts in Fiscal Year 1987.

Overall, this year's budget seeks to sustain positive growth in the future to meet our national security objectives and military strategy of deterrence and flexible response to hostilities. Through careful stewardship of public resources during the first five years of the Reagan administration, we have made significant improvements in force modernization, readiness, and sustainability. With improved acquisition techniques, we will continue to improve our military posture. We have developed a budget that strikes a prudent balance between research, development, test and evaluation, and procurement programs and takes into consideration competing military requirements and program priorities. Congressional approval of this Fiscal Year 1987 budget will allow us to sustain our past gains and meet the growing threat.

LASER ENGINEER INSPECTING GAS DYNAMIC LASER AT KIRTLAND AFB, NEW MEXICO

I. INVESTING IN THE FUTURE

A. Maintaining The Military Balance

In developing this year's budget request, we struck a balance between maintaining our forces' readiness and modernizing our forces to meet an ever increasing threat. Within the current climate to reduce spending, we have adjusted our request to remain within established funding limitations. Despite these austerity measures, we believe the budget still preserves our current wartime capability while maintaining growth in our capability in the future.

In developing this year's research, development, procurement, and logistics budget request we continued to use the following priorities to establish a framework for making our decisions:

- modernize our strategic offensive and defensive forces,
- improve combat readiness and sustainability,
- increase airlift capability,
- modernize and expand our tactical and Air Reserve forces,

We are also improving our ability to operate efficiently and effectively in space. This nation's heavy civilian and military reliance on space-based systems, coupled with the Soviet's potential to disrupt our space systems, requires that we meet the opportunities and challenges space development presents.

B. Fiscal Year 1987 Air Force Budget - Investment Accounts

This year's budget was developed to directly support our strategies for achieving national security objectives in the current and future world environment. Within the present world environment, the predominant threat to the U.S. and our allies national interests is the Soviet Union's military with its advances in technology, expansion of strategic and general forces, and its emerging ability to project military power across great distances. This increased capability has enabled the Soviets to directly and indirectly infringe upon the freedom of other nations. We must protect our freedom as well as that of our friends and allies through deterring direct attack and indirect coercion. Our military strategy is based on the deterrence of war. Should deterrence fail, our wartime strategy is to terminate conflict on terms favorable to the U.S. and its allies.

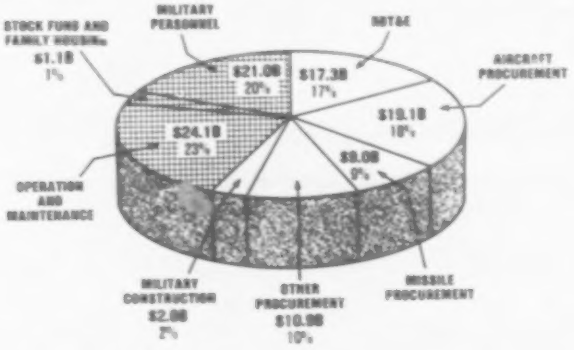
The Air Force's Fiscal Year 1987 budget request provides the balanced combat capability the nation requires to achieve U.S. national security objectives. At the same time, it also provides the proper balance between funding the investment in the developing our future capabilities, as well as maintaining our current readiness and sustainability.

INVESTING IN THE FUTURE

The diagram below illustrates the breakdown among seven major appropriation categories of the Air Force Fiscal Year 1987 budget. The clear sectors comprise the investment accounts and the hatched sectors the operating accounts. Shown in each sector are the dollars requested for Fiscal Year 1987 and the associated percentage of the total request for each account.

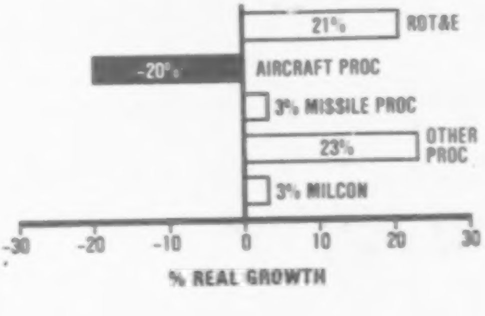
AIR FORCE BUDGET REQUEST
1987

$104.5B



Each investment appropriation's real growth rate as compared to the Fiscal Year 1986 Department of Defense (DoD) Appropriations Act is shown in the chart below. Overall, the Fiscal Year 1987 real growth rate remained almost constant compared to the Fiscal Year 1986 DoD Appropriations Act.

AIR FORCE BUDGET GROWTH RATE
1987



INVESTING IN THE FUTURE

The Research, Development, Test and Evaluation (RDT&E) appropriation has increased 21% with the largest changes attributed to planned increases in development programs in the Tactical and Strategic areas. Tactical programs with the largest changes are C-17, Advanced Tactical Fighter and the Joint Surveillance and Target Attack Radar System. The strategic program increase is due to the Advanced Technology Bomber, AF Satellite Communications, Milstar, Short-Range Attack Missile II, and the Small Intercontinental Ballistic Missile and Hard Mobile Basing portion of ICBM Modernization.

Aircraft procurement has shown the sharpest decline (-20%), as a result of both previously planned program reductions, and new reductions, such as the HH-60 and T-46. Overall aircraft procurement quantities have increased from 333 aircraft in Fiscal Year 1986 to 359 aircraft in Fiscal Year 1987. The largest quantity changes result from the completion of the B-1B production, an F-16 increase (+36 aircraft) and the new procurement of 38 Civil Air Patrol aircraft. Shown below is a comparison of current U.S. and Soviet combat aircraft.

*CURRENT U.S. AND SOVIET COMBAT AIRCRAFT**

Category	U.S. Aircraft	USSR Aircraft
Air-to-Surface	B-52, B-1B	Backfire, Bear, Bison, Badger, Blinder
	F-111	Fencer, Fitter
	F-4, A-7, F-16	Flogger, Fishbed
	A-10	Frogfoot
Air-to-Air	F-15, F-4	Flogger, Foxbat, Foxhound, Fiddler, Flanker
	F-16	Fulcrum, Fishbed, Flagon, Firebar
RECCE/EW/-AWACS	RF-4, SR-71, U-2, TR-1	Fitter, Foxbat, Fishbed
	RC-135	Bear, Blinder
	EF-111	Fencer, Brewer, Badger
	E-3, EC-130	Mainstay, Moss, Cub

* Note: Aircraft used for Force Projection and Training are not included.

(As of 1 January 1986)

Missile Procurement shows a modest 3% growth due to several changes in both directions. While there where decreases in Peacekeeper, spares/repair parts and other support items, there were sizeable increases in our air-to-air and air-to-ground tactical missile procurements. Sparrow and Sidewinder procurements will continue to provide needed air-to-air capability while the Advanced Medium-Range Air-to-Air Missile production line becomes fully qualified. For air-to-ground missiles, the High Speed Anti-Radiation Missile missile has reached its peak production level while the Maverick and AGM-130 missiles are still ramping up to next year's steady production levels.

Other Procurement increased 23% this year. Within Munitions and Associated Equipment, the largest increases were due mainly to the CBU-87 combined Effects Munition, the GBU-15 and the 2000 lb. hard target bombs. Within Electronics/ Telecommunications, the most significant increases are in the PAVE

Submarine Launched Ballistic Missile Warning System, Range Improvements, Joint Tactical Communications, Satellite Control Facility, Consolidated Space Operations Center, Minimum Essential Emergency Communications and Base Level Data Automation. Within other Base Maintenance and Support Equipment, the Chemical/Biological Defense Program shows the most significant increase in the Research and Development related programs.

Summaries of Fiscal Year 1987 funding estimates for individual RDT&E and procurement programs are provided at Appendix A. More detailed information and program justification are provided to the Congress separately. This detailed justification information is contained in the Department of the Air Force Justification of Estimates for Fiscal Year 1987 for the procurement programs and in the Descriptive Summaries for Fiscal Year 1987 for the RDT&E programs. Information on military construction programs is also provided to the Authorization and Appropriation Committees of the Congress.

C. Science and Technology

1. Soviet Challenge to the United States: The U.S. no longer enjoys the vast superiority in weapon system quality which, in the past, was the counterbalance to the significant Soviet advantage in weapon system quantity. The rapidly narrowing U.S. technology lead over the Soviets is primarily due to the science and technology budget level and the covert acquisition of advanced technologies by the Soviets. Given the assumption that the Soviets will continue to build their weapon systems in large quantities, the U.S. is faced with the option of achieving equality in weapon system numbers, or reestablishing unquestionable technological superiority. Since the U.S. has traditionally relied on its quality of weapons systems to offset quantity disparities, we must maintain a broad-based Science and Technology Program that addresses all assigned Air Force mission areas which have sufficient funding to selectively demonstrate high payoff advanced technologies.

2. Science and Technology Strategy: Our technically advanced weapon systems today are the result of carefully planned science and technology investments made several years ago. Because of the long lead time required from the time the science and technology investment is made until the time the demonstrated technology appears in a fielded weapon system, it is critical that sufficient funding is made available now to ensure an advanced technology lead in the next generation weapon systems. This lead-lag situation puts a tremendous burden on the long-range planners to identify future battlefield scenarios and weapon systems. Using the long-term scenario, the science and technology investment strategy has been developed to be responsive to the postulated threat and operational tactics.

While the Air Force must continue to develop broad-based technologies to support the core science and technology program, the investment strategy process must identify those technologies that are revolutionary and will significantly contribute to our warfighting capabilities. However, identification of revolutionary technologies is not enough. We must also have the resource flexibility to pursue those areas that will significantly impact our future weapon systems. Adequately funding the core program and pursuing high payoff technology initiatives will require additional resources allocated to the Air Force Science and Technology Program. The Air Force long-term plans, and in particular the Fiscal Year 1987 budget request, are designed to invigorate our Science and Technology Program to ensure that adequate resources are available for both broad-based mission support and high payoff technology initiatives.

3. High Payoff Technologies: Described below are a number of high payoff technologies that will significantly contribute to our future war fighting capability and our technological superiority over the Soviets.

a. Advanced Microelectronics: Microelectronic advancements such as in Very High Speed Integrated Circuits (VHSIC) and gallium arsenside (GaAs) circuits will result in significant weight and size savings, enhanced reliability and maintainability, and orders of magnitude increases in performance. Both VHSIC and GaAs are expected to be pervasive in future Air Force weapon systems.

b. Advanced Materials: Advanced metallics and composites will extend operating envelopes of advanced aerospace vehicles and enhance survivability, reduce system weight, and provide design flexibility not presently available with existing materials. Metal-matrix composites, for example, will significantly contribute to our ability to build large space structures.

c. Advanced Avionics Architectures: Advanced avionics architectures will allow the integration of many subsystem functions handled individually in today's systems. Weapons delivery, engine management, cockpit controls/displays, flight controls, communications, and navigation are examples of functions which might be integrated. This integration would allow, among other things, higher mission reliability and reduced aircrew workload.

d. Sensor Fused Integration: As the microelectronic technologies mature we will have the processing capability to centrally process very large quantities of information gathered from multiple sensors. This sensor fusion will be a significant contributor to survivability by exploiting large amounts of real-time target information without overloading the pilot and will be one of the subsystems integrated in the advanced avionics architecture.

e. Directed Energy: We are developing advanced directed energy weapon technologies such as phased array telescopes and coupled energy devices that will augment existing conventional weapon systems. Directed energy devices will fully complement conventional weapons and will additionally provide advanced imaging capabilities using unique capabilities provided by advanced directed energy technologies.

f. Software: As the Air Force weapon systems evolve into those that include a number of embedded computers and advanced architectures, it will be increasingly important to develop advanced software technologies that are user friendly and are robust enough for all applications. Use of the Ada language and efforts of the Software Engineering Institute (SEI) will provide the software technology required for future weapon systems.

g. Artificial Intelligence: We expect artificial intelligence technology to be applied to great advantage in aiding decisionmaking in future fast paced combat scenarios. Artificial intelligence will enable us to automate some functions now accomplished manually in command and control systems such as targeting and mission planning. The commander's job will be made easier through the analytical power and speed of the artificial intelligence systems he can use to aid force employment/disposition decisions in complex battle scenarios.

h. **Advanced Aerodynamics**: The Advanced Fighter Technology Integration/F-16 (AFTI/F-16) and the X-29 program are flight test vehicles that demonstrate in the aerospace environment advanced flight technologies such as voice interactive systems, terrain following-terrain avoidance, forward swept wings, aeroelastically tailored wings, and advanced composites. Advanced aerospace technologies will significantly contribute to our basic understanding of transatmospheric flight and atmospheric supersonic sustained flight.

i. **Man/Machine Interface**: Finally we must not forget that Air Force operations will continue to be dominated by man. In all future weapon system developments we must consider man's limitations and ensure that system design evolution includes advanced technologies that complement and extend rather than duplicate human skills.

4. **National Aerospace Plane**: The National Aerospace Plane (NASP) Program is a research program intended to demonstrate a vehicle which can operate as an airplane at hypersonic speeds or as a space vehicle with the capability of accelerating directly (single stage) into orbit. It is envisioned to be a hydrogen fueled, horizontal takeoff and landing vehicle capable of operating from standard runways worldwide. The NASP will have major operational utility for both military and civil/commercial applications. One of its major payoffs will be to provide the technology bases to allow flexible and responsive systems that will satisfy both civic and military space transportation needs at reduced cost.

NATIONAL AEROSPACE PLANE
Conceptual Model

The NASP program capitalizes on past hypersonic research conducted by the Services, DARPA and NASA and focuses research for the purpose of demonstrating a hypersonic research or X-vehicle. Program studies began in 1982 and continued through 1985 (Phase I) under the DARPA program Copper Canyon.

The NASP program is initiated with Phase II, Technology Development and Application Studies. Phase II will enhance the necessary technologies to build actual engine modules and design a vehicle capable of operating in the desired regimes. Based on the results of the Phase II technology evaluation, a decision will be made on whether to fabricate and flight demonstrate a follow-on experimental flight vehicle (Phase III).

5. Summary: There are a number of advanced technologies that will maintain our technological superiority and significantly contribute to our future war-fighting capability. However, we must maintain a balance within the Science and Technology Program between development of revolutionary and evolutionary technologies. And finally, we are cognizant of the need also to maintain the proper program balance between performance enhancement and system supportability and affordability.

D. Reliability and Maintainability 2000

1. The Concept: The Air Force Reliability and Maintainability (R&M 2000) Program was developed by direction of the secretary of the Air Force and chief of staff of the Air Force to institutionalize the Air Force's commitment to improving reliability and maintainability of weapon systems. Reliability and maintainability must be coequal with cost, schedule, and performance factors as the Air Force brings new systems into the inventory and modifies its existing systems.

The Air Force requires improved reliability and maintainability of both new and fielded weapon systems. To achieve this, the Air Force is stepping up its search for basic system changes that will ensure the most reliable, maintainable systems possible for the dollar invested. Reliability and maintainability are means to an end, and that end is combat capability. Reliable systems reduce the ownership costs of systems, reduce the system's dependence on spare parts, require fewer combat support people and result in more missions per deployed system.

2. The Objectives: The objectives of the R&M 2000 program are to:

- Provide clear direction aimed at increasing reliability and maintainability of Air Force systems to increase weapon system combat effectiveness.

- Focus organizational attention and expand training to build the reliability and maintainability technical expertise, advocacy, authority and accountability throughout the Air Force.

- Improve reliability and maintainability planning to consolidate efforts, tie reliability and maintainability to operational goals, and coordinate major command efforts to accelerate improvements in weapon system reliability and maintainability.

- Establish internal administrative systems in order to ensure effective accountability and feedback to measure progress in the reliability and maintainability improvement program.

- Provide positive communications and motivation to sustain commitment to and support for reliability and maintainability goals.

- Obtain and sustain industry commitment to ensure that contractors have the motivation and capability to support reliability and maintainability requirements.

3. The Goals: The Air Force has set five goals to achieve the objectives of the R&M 2000 plan. The achievement of these goals requires institutional commitment to reliability and maintainability in the Air Force weapon systems. These goals are:

a. Increase Warfighting Capability: The U.S. Air Force will measure increased warfighting capability for each of its many different kinds of weapon systems. For aircraft warfighting capability, for example, improvements are expected in the number of consecutive missions a system is capable of flying in combat without requiring maintenance other than refueling and reloading ordinance. The future advanced tactical fighter of the 1990s will be designed to operate at a sustained sortie rate at least twice that of the F-15 Eagle.

b. Increase Survivability of the Combat Support Structure: Many current Air Force systems are dependent on large combat support facilities which are vulnerable to attack and destruction under combat conditions. The key to increased survivability is to reduce dependence on vulnerable fixed operating bases. One way to do this is to make use of technological advances that will reduce dependence on complex maintenance facilities such as the avionics intermediate shop needed to support such systems as the F-15 and F-16. Reducing the need for sophisticated and complex test equipment like the avionics intermediate ship means that fewer combat support people and highly trained maintenance specialists would be placed "in harms way" during a conflict.

c. Decrease Mobility Requirements Per Deploying Unit: Through reliability and maintainability improvements, such as Air Force fighter aircraft with built-in test and on-board fault detection and isolation systems, fewer maintenance people and less support equipment would be needed in a combat zone. Presently more than five C-141B Starlifters are needed to airlift an avionics intermediate shop for a deploying squadron of F-15s. It now takes about 18 C-141B aircraft loads (equivalent) to deploy an F-15 squadron.

By reducing dependence on an avionics intermediate shop through improvements in the avionics system, the Air Force could deploy four squadrons of F-15s with the same airlift required to deploy three squadrons today.

d. Decrease Manpower Requirements Per Unit of Output: Gains in reliability and maintainability translate directly into increased productivity for the highly trained, highly skilled technicians needed to maintain today's aerospace systems. Air Force people are a constrained resource which must be considered during the earliest design stages of weapon systems. Reliability and maintainability improvements will provide the Air Force with the opportunity to reduce dependence on combat support people in future systems, and the potential to reallocate already constrained people resources into priority Air Force activities.

e. Decrease Costs: The decrease in costs through improved reliability and maintainability would come from savings in areas such as acquisition costs, operating and support costs, manpower, training and spare parts costs. For example, the Air Force manages approximately 890,000 different types of spare parts. The parts inventory is worth more than $38 billion. In Fiscal Year 1985, the budget contained more than $6 billion for spares. Management of spare parts involves a highly complex system that employs hundreds of thousands of people. Consequently the higher the reliability of Air Force systems, the smaller the requirement for spare parts and the greater potential for savings.

4. The Programs: Two research and development programs that implement the R&M 2000 goals are: (a) the R&M Maturation and Technology Insertion Program; and (b) Productivity, Reliability, Availabiliy, Maintainability (PRAM) Program.

The R&M Maturation and Technology Insertion program takes a two-pronged approach in attacking the Air Force's more pressing R&M needs. First, we intend to fund selected high leverage generic R&M maturation and technology programs for insertion into current weapon systems. The second effort provides a vehicle to accelerate and apply emerging technologies to developing/future weapon systems. The thrust of this latter initiative is to reduce the cost, schedule, and technical risk.

The three largest projects within the R&M Maturation and Technology Insertion Program are On-Board Inert Gas Generating System (OBIGGS), Molecular Sieve Oxygen Generating System (MSOGS), and radar maturation for the F-15 and F-16. The C-17 OBIGGS effort to improve prevention of fuel tank fires, improve maintainability, and reduce life cycle costs is well underway. In Fiscal Year 1987, prototype fabrication will be completed and qualification testing will be performed to support a production decision. In addition, work will begin to incorporate OBIGGS into the C-130. In terms of MSOGS, studies and operational experience indicate that MSOGS provides significant improvement over the current liquid oxygen (LOX) system. These improvements include: higher reliability - by a factor of 10; greater survivability - LOX infrastructure not required; decreased mobility requirements - 3 to 5 fewer C-141 pallet equivalents per deploying squadron; decreased manpower requirements (per wing) and; lower life cycle costs. Our objective is to incorporate MSOGS into the F-15E as soon as practical. Finally, the radar maturation project will provide funding to transition selected F-15/F-16 radar improvements into R&M modifications and enhance the radar manufacturing process. In Fiscal Year 1987, we intend to start work on developing an improved built-in-test capability for the APG-63 radar and applying a more stringent Environmental Stress Screening (ESS) to the manufacture of the APG-70 radar for the F-15 aircraft.

The second research and development program, PRAM, provides a means to immediately respond to identified weapon system problems through judicious and timely investments in projects leading to improved combat effectiveness and lower life cycle costs. PRAM projects fall under the areas of airframes, avionics, propulsion, missiles, space, depot maintenance, and other support areas. Since its inception, PRAM has initiated 780 projects with an estimated savings to the Air Force of $3.1 billion. This equates to a $5 net return for every dollar invested in the PRAM development and modification. The following are examples of the types of projects PRAM works:

Extended Life Turbine Wheel. The product of this effort was the development of new materials for the turbine wheels of the F-16 Jet Fuel Starter (JFS) and the KC-135R Quick Start Auxiliary Power Unit (APU) System (QSAS). This new material will extend the service life of the F-16 JFS from 500 starts to a minimum of 2000 starts and the K-135 QSAS from 1000 hours to over 2600 hours. Development and implementation cost $1.1 million. Estimated 5 year savings is $30 million.

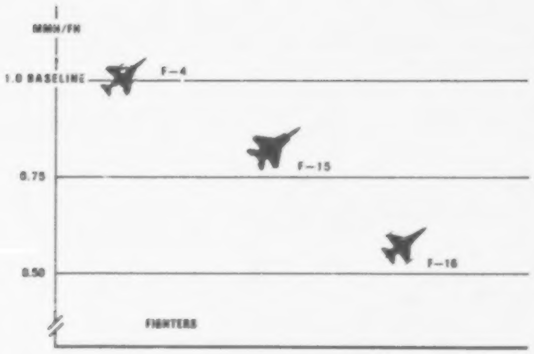
F-15 Honeycomb Structure Replacement for Stabilators and Wing Tip. Project resolves corrosion, cracking and delamination problems on F-15 stabilator leading and trailing edges and wing tips by replacing existing honeycomb structure with superplastically formed bonded titanium/aluminum. Replacement will provide a two-fold improvement in reliability. Development and implementation cost $3.5 million. Estimated 5 year savings is $18.3 million.

B-52/C-130 Autopilot. PRAM has designed a state-of-the-art digital Line Replaceable Unit (LRU) to replace the three highest failure components of the B-52 and C-130 autopilots. Incorporation will provide a 10 fold improvement (25 to over 250 hours Mean Time Between Failure (MTBF)) in B-52 autopilot reliability and a doubling (200 to 500 hours MTBF) in the C-130. Development and implementation cost $11 million. Estimated 5 year savings is $119 million.

The enthusiastic response to R&M 2000 has generated substantial growth in the proposed PRAM projects from the Air Logistics Centers and Major Commands. Currently, PRAM is in the process of reviewing 108 potential projects which require $63.3 million in funding. These projects cover a wide spectrum of Weapon System R&M problems from development of an automated Technical Order System to improvements in F-15 electronics. Unfortunately, the Fiscal Year 1986 funding is insufficient to meet the demand. Accordingly, PRAM has had to defer many projects until Fiscal Year 1987. Without question, the PRAM program is an Air Force success story. The higher level of funding requested for Fiscal Year 1987 is consistent with and reflects the increased demand for improved R&M in our weapon systems.

5. **The Accomplishments**: Significant improvements to Air Force weapon systems have been made in recent years. R&M 2000 will increase the pace of those improvements. Current systems are more reliable and maintainable than the systems they replaced. For example, the F-15 requires only 85 percent of the maintenance manhours per flying hour than the older F-4 Phantom aircraft. The F-16 requires only one-half the maintenance man-hours per flying hour as the F-4. The Air Force expects the Advanced Tactical Fighter maintenance goals to meet or exceed current fighter maintenance levels, and for cargo aircraft, the Air Force expects the C-17 to require less than one-half the maintenance man-hours per flying hour of the C-5A Galaxy. The maintenance man-hours per flying hour are significant factors since, of the more than 485,000 enlisted people in the Air Force today, one in every three is involved in maintaining aircraft.

While these improvements are noteworthy, the challenges we now face are becoming more numerous and severe. The growing Soviet threat has made operating bases and the systems, people, and support equipment located there increasingly vulnerable. Successful operations in this environment demand increased war-fighting capability, survivability, and mobility. In addition, manpower availability will decrease over the coming decade making it more difficult to recruit and train the technical personnel needed to maintain increasingly complex weapons. Finally, current budget realities demand lower operations and support costs.



MAINTENANCE MAN-HOURS PER FLYING HOUR COMPARISON

6. Summary: The Air Force R&M 2000 goals provide the key leverage points for achieving increased combat capability; increased survivability of the combat support structure; decreased mobility requirements per deploying unit; decreased manpower requirements per unit of output; and decreased costs. Revising the way the Air Force views reliability and maintainability will not be enough. Reliability and maintainability are now coequal with the cost, schedule and performance factors associated with the acquisition of new systems and modifications to existing systems.

The payoff from these and other improvements in reliability and maintainability will be enhanced combat capability and an improved deterrent posture for America's "Arsenal of Democracy".

E. Industrial Base

The United States' defense-related industrial base consists of privately-owned and government-owned industrial facilities needed to produce and maintain military items required by the Armed Forces in peace and wartime. The industrial base is a major element of national defense. A healthy base is of tremendous value as a deterrent to aggression.

The Air Force Industrial Base Program (IBP) mission is to direct industrial base activities as tasked in Executive, Congressional, and Department of Defense guidance. The Air Force program ensures the goals of productivity, efficiency, and cost-effectiveness that are normally associated with peacetime acquisition complement industrial preparedness and those actions that are necessary to accelerate production in times of national emergencies.

INVESTING IN THE FUTURE

Air Force IBP planning ties together many elements that impact industry and industrial responsiveness. The Air Force goal is to deal with industrial base issues cohesively. Industrial responsiveness actions must complement productivity efforts and be part of the normal acquisition process. The key to Air Force industrial base plans is not the invention of new programs to deal with deficiencies, but to use the current acquisition system with greater effectiveness.

Air Force objectives in this area focus on a revamped, annual Production Base Analysis (PBA) methodology. The PBA process is not unique. It is based on approaches that have been around for many years. The PBA uses analyses gathered from a vertical look at weapon systems and from a horizontal look that cuts across industry and Service lines to view entire industry sectors. The PBA then ties findings and industry deficiencies to recommendations for action. For example, it might recommend adjustments to the Government Plant/Facility Plan or call for initiating a Manufacturing Technology or Industrial Modernization Incentives Program. It may require a more traditional preparedness action like stockpiling, the purchase of special test equipment, increases in war reserve stock kits, or in funding rolling inventories.

Many of the IBP activities are monitored through a single Air Force Program Element, 78011F. This element includes Industrial Base Program Planning, Government Plants, Production Surge, Manufacturing Technology and Technology Modernization program funding. Other IBP activities are funded as part of the individual weapon system or Air Logistic Center program plans.

The Air Force looks at the current IBP with a great sense of accomplishment. In the late 1970's, the Air Force had virtually no IBP because of the prevalent view that wars would be short. Because the industrial base may take a long time to accelerate deliveries, it was not considered a factor in war planning. The complications and magnitude of the task to understand the industrial base were staggering; therefore, few efforts were made to use the industrial base as a valuable part of overall deterrent strategy. Renewed emphasis in the 1980's on sustainability and improved methodologies for incrementally characterizing the industrial base, sector by sector, now allows the Air Force to accurately understand the base and actually work within the normal acquisition system to influence improvements and modernization of the defense industrial base.

ELECTRICAL ENGINEER WORKING
ON INTEGRATED CIRCUIT DESIGN
WRIGHT-PATTERSON AFB, OHIO

GENERAL DYNAMICS F-16s BEING MANUFACTURED
AT FORT WORTH, TEXAS

II. ACQUISITION MANAGEMENT ENHANCEMENTS

A. Objectives

The Fiscal Year 1987 budget was developed in an environment in which a broad range of new acquisition management policies and practices had been established. The success of the Air Force research, development and acquisition program depends on a strong, efficient management system. Within the past year the basic process through which we acquire and support complex weapon systems has been subjected to meticulous evaluation and numerous management techniques have been refined to ensure better control of our resources. In conjunction with this budget submission, a broad range of improvements will be pursued in basic acquisition policy, spare parts acquisition systems, people programs, and NATO Cooperation.

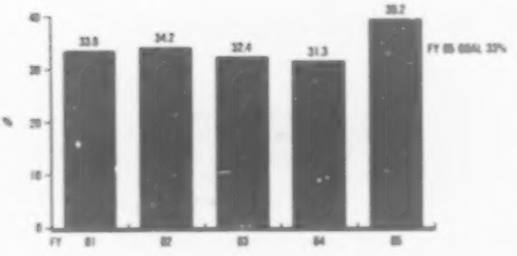
B. Acquisition Policy and Procedures

1. Acquisition Cost Reduction: The management initiatives discussed in the following paragraphs of this section are being instituted to reduce the costs of weapon systems. At the top of our list is increasing competition across the board in Air Force contracting.

2. Competition Advocate: The Air Force believes that increasing competition is the most important initiative we can pursue to reduce the cost of all acquisitions, from major weapon systems to spare parts. In January 1982, we established the Competition Advocate Program. In addition, the commanders of 15 major commands and operating agencies have established three-year competition plans designed to reach the goals established. We have sent to the field more than 300 Competition Advocates to serve in more than 160 contracting locations throughout the Air Force. Our advocacy efforts have been made institutional through published directives that map out program infrastructure. In response to Congressional direction the Air Force Competition Advocate General office was established three years ago to further increase our emphasis on competition. The advocate, a general officer, is on the staff of and reports to the Assistant Secretary of the Air Force for Research, Development and Logistics. This office is reviewing all justifications for proposed noncompetitive awards exceeding $10 million and recommends disposition to the Assistant Secretary. In light of these efforts, our Fiscal Year 1985 accomplishment was 39.2% of our procurement obligations. An additional 48% was awarded as follow-on to procurements that were originally competed. Non-competitive acquisitions were only 12.8%, the lowest in over ten years. We have established an Air Force competition goal for Fiscal Year 1986 of 42% of our procurement obligations. (The Fiscal Year 1987 goal will be developed during 1986). This is a 9% increase over our Fiscal Year 1985 goal of 33%. We have given emphasis to proven techniques such as second sourcing, component breakout, and subcontract competition. These techniques serve to mandate the use of competition throughout the acquisition cycle.

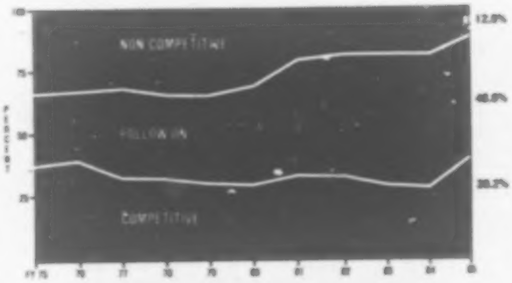
ACQUISITION MANAGEMENT ENHANCEMENTS

AIR FORCE COMPETITION PERFORMANCE



PERCENTAGE OF CONTRACT DOLLARS AWARDED COMPETITIVELY

AIR FORCE PROCUREMENT DOLLARS COMPETED



a. Second Sourcing: Second sources are being used in a number of major programs at the prime contract level. These include production contracts involving the Alternate Fighter Engine; the AIM-7M and AIM-9M air-to-air missiles; the imaging infrared Maverick air-to-ground missile; the Ground Launched Cruise Missiles and the combined effect munition. We are introducing a second source for the Advanced Medium Range Air-to-Air Missile. We are also initiating a competition between the F-16, F-20, and other appropriate aircraft for the Air Defense mission.

b. Component Breakout: Below the prime contractor level, the Air Force is actively working to save contract dollars. By breaking out components from prime contractors for competition, we save overhead and handling costs. A variety of subsystems and components now are being pursued. These include canopy transparencies, wheels and brakes for the F-16 and B-1B, B-1B InertialNavigation System, radomes, and vertical situation display/gyro stabilizer; F-15 countermeasures dispenser, and the F-16 radar.

c. Subcontract Competition: Competition by our prime contractors with their vendors and suppliers also is being actively encouraged. Subcontract competition plans are required for major programs to ensure that the prime contractors consider competition in their buy decisions. While subtier competition is not recognized in Air Force competition statistics, it produces all the benefits of competition for our weapon system programs. The Air Force has proposed a change to the Federal Acquisition Regulation for subcontract competition reporting to help improve subcontract competition.

3. Acquisition Streamlining: The Air Force believes overspecification can be a significant cost driver on our weapons acquisition programs. To improve this and other aspects of the acquisition process, the Air Force is an active participant in OSD's Acquisition Streamlining Initiative. For example, in January 1985 we appointed a Streamline Advocate. This position was established to focus overspecification policy development, systematically review the acquisition process, and to institute methods and initiatives which will reduce the time and cost of weapon systems acquisition while maintaining or improving product quality. With the initial focus on overspecification, the Air Force, in September 1985, published a change to our overall acquisition policy regulation. In addition, the Streamline Advocate has been included in the initial review of operational requirements to ensure these are not overstated. Further, overspecification of replenishment items is a basic consideration of our Zero Overpricing Program. Finally, we have actively supported internal and OSD initiatives and policy development to prevent overspecification, reduce contract requirements and improve the acquisition process.

4. Program Stability: To be efficient, the acquisition process must operate in an environment that has stable requirements, financial resources, and managerial support. Unless stability exists, the acquisition process will be continually faced with uneconomical program stretchouts, cost overruns, technology updates, and management inefficiencies. The Fiscal Year 1987 program includes employment of proven management techniques that encourage this vital stability in programs.

a. Program Baselines: After careful review, we select those major acquisition programs for HQ/AF approval which will benefit the most from enhanced program stability. This baseline is an agreement between the developer, usually Air Force Systems Command, the users, TAC, MAC, SAC, etc., and the supporter, usually Air Force Logistics Command, that the requirement, direction, funding, and schedule will allow us to field a system when it is needed, at a realistic cost, with proper logistics support and, and most important, with the capability required. Signed by senior Air Force leaders, the baseline document highlights those programs which are felt to be most important to fulfill our national objectives. Baseline agreements are maintained throughout the acquisition program and have proven to be a valuable aid in controlling cost growth on systems such as the B-1B, KC-10, F-15, F-16, Ground Launched Cruise Missile, and Defense Meterlogical Satelite Program. The Ground Wave Emergency Network program will be baselined in Fiscal Year 1987.

b. Multiyear Procurement: Since the multiyear law was expanded in 1982, the Air Force has initiated thirteen major efforts involving multiyear contracting techniques. The savings from these contracts exceed $3.2 billion. In addition, the agreements have resulted in programs that have been free from major quantity changes that might have otherwise occurred during the multiyear contract term. This stability might not have been possible without the detailed process used to select our existing and proposed multiyear contracts. They include B-1B aircraft production and spare parts, the Navstar Global Positioning system satellites the KC-10 tanker cargo aircraft and the Defense Satellite Communication System III satellite. The F-16 aircraft began its second multiyear procurement contract in Fiscal Year 1986.

5. Should Cost: Should Cost reviews are being conducted of our major contractors to ensure that engineering labor, manufacturing effort, and overhead resources are being used as efficiently as possible. The Government evaluation team, consisting of engineers, auditors, and pricing specialists, reviews all areas of cost and prepares an overall evaluation. The recommendations will be used in the formulation of price objectives and during negotiations. Should Cost team members will participate in negotiations and assist the contracting officer in realizing the recommended savings. Should Cost analyses have yielded significant cost savings in the past. To aid in evaluating other programs, documentation will become part of a history that will be available for use by other Should Cost teams faced with similar program efforts.

6. Work Measurement: Program managers have incorporated the requirements of MIL-STD-1567A, "Work Measurement," into their contracts to obtain direct labor productivity information for use as a baseline in estimating manufacturing costs. Programs for which it is proposed that Work Measurement not be used must first obtain a waiver approved by the Secretariat. Air Force Systems Command (AFSC) reviews contractors' systems for establishing engineering work standards in compliance with MIL-STD-1567A, and reports to the Secretariat on all instances where tailoring of the MIL-STD-1567A has been approved. The use of MIL-STD-1567A is a key to determining contractors' productivity. Productivity indicators are now included in all program assessments. AFSC has issued policy that requires the use of engineering work standards in estimating and negotiating contract costs. The Fiscal Year 1986 Department of Defense Authorization Act specifies Work Measurement as the preferred method for establishing the direct labor hour standards and tracking system associated with the contractor Bills of Labor.

C. Spare Parts and Support Equipment Acquisition

1. Spare Parts Management in Perspective: Our spare parts acquisition and logistics system, while not perfect, is a very effective and efficient system. We support 122 active bases and 150 Guard and Reserve installations as well as radar sites, ballistic missile locations, electronic combat operations sites and other auxiliary airfields. In all we support some 2,835 installations around the world. In the area of spare parts alone, the Air Force manages some 890,000 different types with an active inventory worth more than $38 billion. We process more than 4 million procurement actions each year. The system is large, complex, dynamic, and

ACQUISITION MANAGEMENT ENHANCEMENTS

employs thousands of people. Recognizing its size and complexity, we have worked hard to identify deficiencies and improve the system. As a result, many new procedures have been implemented that will correct faults in the system permanently. These changes are essential to insure that funding requests for spare parts will result in maximum improvements to readiness and sustainability.

2. Impact of Air Force Internal Studies: The basis for these improvements has been a series of major studies undertaken by the Air Force over the past years to uncover the reasons for high spare parts costs. The Air Force's own internal oversight and review systems revealed that significant savings could be realized through tighter management actions. The Air Force has aggressively implemented the vast majority (over 95%) of the specific recommendations which were identified during these studies.

a. Requirements Forecasting: The first spare parts initiatives involved a change to the requirements process. In April 1983, a study designated CORONA REQUIRE, was completed that recommended 26 different improvements to the Air Force's system for forecasting aircraft replenishment spares. All of the suggestions have been implemented. Some of the implemented actions include ADP programs which are on-going efforts and will not be fully operational until 1989. While CORONA REQUIRE has been closed out, the process of improving forecasting methodologies continues. We are constantly refining our forecasting models to better capture the multiple variabiles impacting spares forecasts.

b. Spares Pricing: The most exhaustive spare parts study ever under-taken by the Air Force was produced by the Air Force Management Analysis Group in October 1983. The 62-member group of logistics and contracting professionals made 178 recommendations which have served as the Air Force's guidepost for solving the overpricing problem. The group found that as a result of spares underfunding and a lack of manpower, the acquisition process had not focused on low value spares contracts. A lack of competition, limited data, manpower constraints, and ineffective pricing techniques were evident. A General Officer Steering Group at Headquarters Air Force continues to direct and monitor implementation of these recommendations by Air Force acquisition personnel at all levels. It is our intent to make these system changes institutional to preclude recurrence. Of the 178 recommendations, 168 (94%) are now completed.

c. Support Equipment Review: Support equipment for our weapon systems is bought in small quantities, but in large lots of diverse items. Support equipment development and purchases must parallel the weapon system development and production to ensure a supportable system is placed in the field. In March 1984, a Support Equipment Acquisition Review was completed analyzing this process carefully. Nineteen areas were identified for improvement in forecasting, planning, and pricing. Controls have been implemented to deter the proliferation of support equipment. The General Officer Steering Group is directing the progress of initiatives stemming from this effort. Of the 128 specific initiatives identified, 122 (95%) are completed. Most initiatives will be implemented by February 1986.

3. Replenishment Spare Parts Breakout: The Department of Defense Spare Parts Breakout Program is a major management enhancement that demands the identification of parts that can be procured competitively or from actual manufacturers rather than from the prime contractor. To accomplish that goal, Air Force Logistics Command's Competition Advocates screen anticipated buys for

potential breakout to the actual manufacturer. Ninety-seven percent of the candidate items reviewed in Fiscal Year 1985 were coded for competition or breakout. In Fiscal Year 1987, we expect the breakout program to continue increasing competition among Air Force contractors, reducing sole source procurements, broadening the industrial base, and lowering prices for spare parts.

4. New Policy on Spare Parts Retention: We are continuing to stress a philosophy of retaining spare parts. Previously, we viewed the disposal of spare parts in our economic interest if the inventories exceeded specific long-term usage projections. Instead of facing the potential that discarded parts might be repurchased, we now direct that Air Force managers retain parts as long as we have systems that require them. It should save money and contribute to our readiness. The Secretary of the Air Force directed a five-point program in 1984 that began with a moratorium on all disposal actions. We are pleased to report that new procedures are now in place to implement the five-point retention program and the moratorium has been lifted.

D. People Programs

1. Objectives: The professionalism of the acquisition management community is an issue of major importance not only to the Air Force, but also to Congress and the American public. The Air Force acquisition community is the best trained and most professional in the government. Our acquisition management initiatives are designed to develop an even more professional, and better qualified cadre of acquisition personnel. Training, education, and experience are focal points in our management of personnel resources.

2. Acquisition Career Field: The Air Force has long recognized the need for a well-qualified acquisition community and is a leader in acquisition training and career development. Our acquisition career field offers progression paths to General Officer and Senior Executive Service levels, and our personnel are among the best trained in DoD. Air Force training and career development programs have proved successful, and we have provided OSD with information gained from our experience for formulation of an OSD position on training, education, and experience objectives. We are continuing to work with OSD in development of ways to improve the professionalism of our acquisition work force, including requiring a baccalaureate degree, mandating additional and specialized training, and specifying experience and tenure requirements.

3. "COPPER TOP": Project "COPPER TOP" was begun to examine current training shortfalls within the contracting work force. A planning team was organized to size requirements, identify problems with the training system, develop alternatives, and prepare a plan for corrective action. Extra funding in the Fiscal Year 1986 DoD Appropriation combined with the current Five Year Defense Plan will help correct a 60 percent shortfall in the completion of mandatory training courses. Current action items include establishment of mandatory training requirements for the GS-1910/QA Series, establishment of a mandatory Contracting Officer course, and participation in course reviews.

4. PALACE ACQUIRE: The Air Force PALACE ACQUIRE is a centrally-managed and funded competitive intern program. This initiative was established in 1985 and is targeted to recruit recent quality college graduates to entry-level GS-5/7 trainee positions in a variety of occupational fields. The program scope is based on work force analyses of turnover rates, mission, and technological changes. The

contracting career field, for example, is already experiencing a turnover rate that is 13 percent above other career fields and the Air Force projects a 20 percent loss of contracting professionals due to retirements alone in the next five years. PALACE ACQUIRE helps to maintain civilian work force stability and expertise in major functional areas by providing a pipeline of available and highly-skilled civilian employees. PALACE ACQUIRE has been approved as a Fiscal Year 1987 initiative.

5. Performance Standards: A pamphlet incorporating newly developed performance elements and standards for contracting and acquisition personnel is scheduled for publication in 1986. Such standards recognize the need to increase competition, create dual sources, break out items from prime contractors, negotiate effectively, and price hardware on the basis of its intrinsic value. Other career areas are similarly receiving a comprehensive review to determine that performance standards reflect our concerns about cost consciousness and competition.

6. Rewards: The Air Force has established a specific award to recognize contracting personnel who excel in obtaining competition. The award, called the "Outstanding Contribution to Increased Competition Award," was established and first presented in 1983. This annual award provides for continuing emphasis on competition. Another new award, "The Air Force Professionalism in Contracting Award" was established in 1985. Presentations were made to the first recipients in August 1985. The award, in recognition of demonstrated dedication and professionalism on the part of contracting personnel, is presented to emphasize the Air Force's high level of interest in enhancing professionalism in the contracting work force.

7. Summary: The Air Force acquisition workforce remains unsurpassed within the government. Our goal is to develop an even more professional, better qualified, acquisition management work force in order to develop and refine the Air Force acquisition management process. People are an integral part of the process. The most effective improvements come from within, from the people with the education, training, and experience necessary to identify the real problem and propose solutions. Our efforts to date have resulted in significant improvement and cost savings. It is our corporate objective to continue to pursue new opportunities to improve our work force and the acquisition process.

E. NATO Armaments Cooperation

1. Early Program Involvement: Success in cooperative development programs is greatly enhanced by initiating the NATO cooperative program early in the development cycle. Indicative of our emphasis on such programs are three feasibility studies with several different NATO partners. They are the Long-Range Standoff Missile (LRSOM), the Short-Range Anti-Radiation Missile (SRARM), and the Low Cost Powered Dispenser (LOCPOD). While we have no commitment to go beyond the feasibility study phase, we intend to proceed into a full scale cooperative development program if the results of the study prove favorable.

2. Mature Program Involvement: We have several major cooperative programs with our NATO allies that go far beyond feasibility studies. In the coming year we plan to implement the Eifel C^2 System upgrade with Germany, the imaging infrared Maverick Co-production program with Italy, and will continue the Four-Power Memorandum of Understanding on Family of Advanced Air-to-Air Missile

Systems (AMRAAM/ASRAAM). For additional information on these latter two missiles, refer to Section VIII, Theater Forces.

3. **Future Cooperation**: We anticipate that Air Force NATO cooperative programs will increase over the next few years. The Nunn Amendment to the Fiscal Year 1986 Authorization Act, which set aside funds for NATO Cooperative R&D projects, gave us a much needed means to increase our cooperative involvement. As a result of that legislation, we will initiate cooperative projects during 1986 for a series of Modular Air Launched Stand-off Weapons. We expect these projects to evolve into full scale development programs over the next the years.

Reflecting both Congressional and OSD direction, we will assess the availability and suitability of NATO allies' development programs before we start new programs that are potentially duplicative. The Foreign Weapons, Equipment and Technology Evaluation (FWETE) program has resulted in several weapons entering our inventory without the attendant development costs. The French made Durandal Airfield Attack weapon for example is being bought by the Air Force after our evaluation under the FWETE program verified its suitability for the Air Force mission. In Fiscal Year 1986, the Air Force FWETE program increased over ten percent from Fiscal Year 1985 and we plan a similar increase in Fiscal Year 1987.

WEAPONS LOADING COMPETITION
GUNSMOKE 85

III. READINESS AND SUSTAINABILITY

A. Objectives

Air Force investment in force structure and modern weapon production may be translated into a war-fighting capability only if readiness and sustainability programs are functioning well. Success in combat requires a blend of modern equipment, well-trained people, effective repair facilities, sufficient spare parts, and adequate munitions and fuel.

Ready forces, on hand, form the basis of our capability to engage the enemy effectively on the first day of fighting. Readiness is the sum of proficiency and sufficiency, in forces, units, weapon systems and equipment. Readiness requires that forces be trained under realistic conditions and stocks of spares be available at the beginning of combat.

Aircrew proficiency in all of our modern weapon systems is at its highest level in years. Our tactical fighter proficiency was recently demonstrated in GUNSMOKE 85, USAF's worldwide fighter gunnery competition. GUNSMOKE 85 was held on October 6-19, 1985 at Nellis Air Force Base, Nevada. The events in the competition tested the pilot's ability to navigate at low altitude, arrive on time, on target, and destroy that target using actual wartime munitions dispensers. During low level navigation, the crews were required to evade surface-to-air threat simulators while maintaining precise course and timing criteria. In the navigation-attack mission competition, the top five teams all achieved a direct hit and arrived within less than a second of their respective scheduled times.

The tactical bombing competition showed equally impressive results and the F-16 Fighting Falcon, the tactical Air Force's newest fighter, took six of the top seven places of 17 teams. The Air Force's attention to modernization and training in the reserve forces over the past several years was rewarded by the excellent Air Force Reserve and Air National Guard (ANG) scores. An Air Force Reserve unit from the 419th Tactical Fighter Wing, Hill Air Force Base, Utah, flying F-16s, was the overall winner. AF Reserve/ANG units took four of the top ten places in the overall bombing competition. GUNSMOKE 85 demonstrated that the investment over the past five years in modern weapon systems like the F-16, and training for both air and maintenance crews, has paid off in significantly increased readiness and combat capability.

Sustainable forces, on the other hand, must have the "staying power" to fight during and beyond an initial period of combat. To do that, they depend on the nation's ability to generate adequate spares, supplies, munitions, and fuel to replace those resources consumed or attrited in battle. Moreover, sustainability results only when peacetime stocks, the support infrastructure, war reserve materiel, and the industrial base permit it.

Air Force materiel inventories are split into categories: peacetime operating stocks and prepositioned wartime assets. The categories equate to those "readiness" kinds of spares and equipment needed at the outbreak of war; and prestocked wartime requirements, which support "sustainable" fighting and depend on deeper stock levels and industrial surge.

Since 1981 the Air Force has sought to reduce the serious shortfalls in wartime stocks and at the same time keep the forces ready. This emphasis has brought clear tangible results. Today, our combat aircraft can fly over 83 percent more combat sorties in NATO than they could in 1981 and do so with more capable airframes. Further, an increase of 50 percent in the defense budget for sustainability programs between Fiscal Year 1982 and Fiscal Year 1984 resulted in an increase of over 65 percent in the number of sorties which can be supported with preferred munitions between 1983 and 1986.

B. Aircraft and Missile Spares and Repair Parts

The strong support and momentum for funding readiness and sustainability stocks sustained through the first half of this decade have diminished in the face of the nation's increasingly austere fiscal climate. This is reflected in the Fiscal Year 1986 budget as well as the Fiscal Year 1987 fiscal guidance. Because of the two-year average lead time to procure spares, the Fiscal Year's 1986 and 1987 reductions will begin to impact our readiness posture in Fiscal Year's 1988 and 1989.

To understand the impact of these reduced funding levels, it is necessary to first define the various segments of spares support.

Peacetime Operating Stocks (POS) are those spare and repair parts that support the day-to-day readiness objectives of the Air Force. They are needed for combat forces training, continuation of daily operations, and assurance that our weapon systems are ready to perform their wartime mission. Our POS procurement consists of two distinct elements --initial spares and replenishment spares. Initial spares include items to support early operations of newly-delivered aircraft and missiles. The account also funds spare engines, initial support for simulators, modifications and ground support equipment. This segment provides the inventory base of spare parts to which our wartime stocks are added.

Included in this fiscal year's initial spares request are spare engines for F-15 and F-16 fighter aircraft, the cornerstones of our tactical forces. In addition, our Fiscal Year 1987 request includes emphasis on the F-15E dual role fighter, the Peacekeeper strategic missile, and the C-5B transport aircraft. Our Fiscal Year 1987 request also includes our estimate of the initial outfitting costs of additional weapon systems that have been in production for some time. This is in consonance with a new DoD definition of initial spares -- what the Air Force calls "New Acceptance Spares".

The second POS element, replenishment spares, is required to provide continuing support throughout the life cycle of a system. Adequate funding of replenishment spares is critical if we are to support our flying hour and missile alert programs and be ready to go to war.

In addition to POS, we must provide war reserve stocks and inventories which are necessary to satisfy wartime requirements. We group these materiel requirements into two categories. The first, War Readiness Spares Kits (WRSK) and Base Level Self-Sufficiency Spares (BLSS), are provided to support initial combat operations, but are only designed to carry us through the initial stages of conflict. A second category of reserves, Other War Reserve Materiel (OWRM), is designed to provide the sustainability needed until the industrial base can react.

The Fiscal Year 1987 budget for replenishment spares reflects the cumulative effects of reduced appropriations in Fiscal Year 1986 and fiscal guidance in Fiscal Year 1987. Our budget requests $2078 million for POS and $472 million for WRSK/BLSS. This represents a decision to finance the AF replenishment spares account at 56% of our total Fiscal Year 1987 requirement. Our request places emphasis on funding what we consider our highest spares priority -- the POS requirement. The Fiscal Year 1987 budget request supports 100% of this vital requirement. It is in the area of our war reserve stocks and inventories that the new fiscal climate is most seriously affecting us. For example, our budget request supports on 24% of our aircraft WRSK/BLSS requirement. This will allow us to buy only our Fiscal Year 1987 new kit authorizations and a small percentage of our kit update requirements. Moreover, there are no funds available for aircraft OWRM sustainability stocks in Fiscal Year 1987. The Air Force is concerned over these reductions and is dedicated to achieving required levels of readiness and sustainability in Fiscal Year 1988.

The Air Force Stock Fund (AFSF) procures consumable bits and pieces needed for spares asset repair and maintenance. Full funding of AFSF requirements helps to maintain higher overall levels of spares availability. However, fiscal constraints have also reduced AFSF funding further compounding the management task required to sustain gains in readiness and sustainability made earlier.

For missile spares and repair parts continued Congressional support is indispensible to maintaining our present high mission capable rates. In Fiscal Year 1987 in particular, funding continuity is needed to sustain the extended operational life of the Minuteman ICBM force while establishing essential initial support capabilities for Peacekeeper and a number of other new missiles.

Readiness and sustainability are the products of continued support for many items reflected in other appropriations, such as munitions, bare base equipment, vehicles, fuel, other procurement equipment spares and repair parts, depot maintenance and military construction. In addition to spares and repair parts, those items controlled within the budget categories under consideration include: war consumables, simulators and trainers, modifications, and aircraft common ground equipment.

C. War Consumables

War Consumables are aircraft alternate mission equipment items required to configure combat aircraft to a variety of employment roles. An example is the F-16, which needs one combination of external fuel tanks and missile launchers for its air-to-air role and a different combination of external fuel tanks, missile launchers, and bomb racks for its air-to-ground role. These items are generally capable of being jettisoned during combat to reduce drag, increase speed, and improve maneuverability. As a general rule, items funded in this category are War Reserve Materiel stocks. However, Peacetime Operating Stocks for improved war consumable items for older inventory aircraft are also funded in this category. Inventory support equipment, such as storage and transport containers unique to War Consumables, are also funded here. War Consumables are absolutely essential for readiness training in peacetime and for sortie sustainability support in wartime. Inventory requirements are dependent on current and projected aircraft inventories, employment roles, tactics, combat sortie rates, and expected combat expenditure-per-sortie factors.

In Fiscal Year 1987, we have requested funds to continue filling War Reserve Materiel requirements for the F-16 aircraft's 370-gallon wing tank and pylon. We are also requesting funds to procure the last increment of War Reserve Materiel stocks of the LAU-117 single-rail Maverick missile launcher for various tactical aircraft and the last increment of the electronic adapter units for the LAU-88 triple-rail Maverick launcher to upgrade that launcher to accommodate the wide variety of aircraft and Maverick missile combinations now in use. This budget also requests initial funding for LAU-128 and LAU-129 launchers to match the scheduled upgrades of F-15 and F-16 aircraft to the Advanced Medium Range Air-to-Air Missile. These launchers can also launch current inventory AIM-9 missiles. They provide a vast improvement in reliability and maintainability over our current AIM-9 launchers, in that the LAU-128 and LAU-129 incorporate a more reliable and more easily replaceable modular power supply.

D. Simulators and Training Devices

Combat aircrew proficiency is the ultimate force multiplier. It requires realistic training in a total systems environment that includes both the weapon system and a family of training devices and training aids. Through the use of simulators and training devices, we are able to compliment our highly valued flight time, to enhance combat capability, and at the same time improve safety.

The nation's investment in modern simulation results in increased mission readiness through more efficient and effective training. Training devices are used to train war fighting skills that are not easily trained in the aircraft because of equipment and weather limitations as well as airspace restrictions. We also use our ground based devices to train safety-of-flight tasks and emergency procedures that require flight conditions that are either difficult to achieve or not prudent to accomplish in the aircraft. By practicing these tasks in training devices, the use of simulation makes our flight time more effective, more efficient, and provides us with crews who are better prepared to defend our nation.

We currently have simulators for most weapon systems, including the F-4, F-111, F-15, F-16, and A-10 fighter aircraft, C-5, C-141, and C-130 transports, KC-135 and KC-10 tankers, T-37 and T-38 trainers, B-52 bomber, and E-3 Airborne Warning and Control System. Introduction of new aircraft, technological improvements such as visual systems and logistical requirements such as conversion from analog to digital technology mandate a need to continue support of simulators and training devices.

In Fiscal Year 1986, we fielded our first C-5/C-141 Aerial Refueling Part Task Trainer, a B-1B Cockpit Familiarization Trainer, and our first EF-111 Operational Flight Trainer (OFT). We started refurbishment of our KC-135 OFTs that help us convert from analog to digital technology and also began development of a simulation capability for the Low Altitude Navigation and Targeting Infrared System for Night (LANTIRN). Development continued in Fiscal Year 1986 on the F-15E Dual Role Fighter, C-5B update, and F-16C/D simulators. These development activities will continue in Fiscal Year 1987.

The Fiscal Year 1987 budget request will continue procurement of the F-15, F-16, B-1B, KC-135, and LANTIRN simulators systems. Extensive front-end analysis will begin for the Advanced Technology Bomber, the Advanced Tactical Fighter, and C-17. In addition, development will continue to advance the simulation technologies necessary to complement our flight time and improve our combat aircrew proficiency.

E. Modifications

The decreasing number of new aircraft has necessitated the modification of the in-service fleets of Guard, Reserve, and Active Duty aircraft to extend their safe service life, increase their reliability and maintainability, and increase their capability to meet the emerging enemy threat. Extending the service life of aircraft beyond the original design will require structural improvements to the F/RF-4, C/KC-135, and T-38. Also required will be modifications to replace obsolete electronic technology, which is becoming increasingly more difficult and expensive to support. With the solid-state chips and digital technology comes increased reliability which will more than pay back the cost of modifications through reduced depot support costs and maintenance manhours. Digital inertial navigation systems will be installed in the F/RF-4, A-7, and the F-15; autopilot updates will be accomplished on the C-130 and C-141; and weapons delivery improvements will be made to the F/FB-111 and the F-4. Incorporation of more durable components in the engines of the C-5, F-15, F-5, and A-10 will reduce the frequency of engine changes and decrease the possibility of in-flight failures.

The greatest number of increases in capability will be in the areas of airborne command, control, and communication; special operations forces; and navigation. Numerous improvements in radios on board the E-3, E-4, and fighter aircraft will permit rapid secure jam-proof communications and coordination with ground and airborne forces. Increasing the sensor capability of the special forces aircraft and helicopters will enhance their capabilities to handle threats in counter insurgent and limited warfare situations. The modification of seven different aircraft to use the Navstar Global Positioning System is the beginning of a program which will eventually give almost every aircraft a pinpoint navigation capability based on satellites.

F. Aerospace Ground Equipment

The Fiscal Year 1987 budget request provides common support equipment for new aircraft entering the inventory and for aircraft being modified, as well as replacement equipment for out-of-production aircraft. Common ground equipment is used on the flight line, in base maintenance shops, and at centralized maintenance activities and supports launches, maintenance, servicing and testing of aircraft and their components. Examples of common ground equipment included in this budget request are noise suppressors, ammunition loaders, radar test sets, and air compressors.

B-52 CREWS RESPONDING TO AN ALERT EXERCISE

IV. Strategic Offense

A. Objectives

The United States' strategic offensive forces are composed of a Triad of sea-launched ballistic missiles, land-based intercontinental ballistic missile (ICBM) , and manned bombers. These forces perform two vital and interrelated functions which directly support our national security objectives. First, the strategic offensive forces serve as a deterrent to any potential aggressor. The potential aggressor must perceive that we have sufficient forces to retaliate in a conflict and that the United States has the resolve to use those forces. The second function contributes to this perception by ensuring that, if deterrence fails, the United States possesses both the weapons and the resolve to fight and meet our national security objectives. This Triad not only provides the flexibility and capability to discourage a first strike against the United States, but it also complicates Soviet efforts to defend against this retaliatory mix of forces.

The Air Force is responsible for maintaining two-thirds of the Triad, land-based ICBMs and the manned bomber. Within these areas, we have continued the modernization program initiated by the President in 1981. We can see the fruits of our labor and the significant investment. We are modernizing our ICBM fleet through the upgrade of our Minuteman force and the acquisition of a new missile, the Peacekeeper. Our bomber force is also seeing new life. We have upgraded some of the systems on our B-52s which further extends their lifetime and we are seeing the delivery of our new B-1B bombers. The B-1B is the first new strategic bomber in more than twenty-five years. Looking to the future, our programs are progressing on schedule, and we are continuing to provide the mainstay of our nation's defense.

B. Intercontinental Ballistic Missiles

BACKGROUND

1. Rationale: The United States' intercontinental ballistic missile leg has three central purposes. First, ICBMs help deter Soviet threats of massive conventional or nuclear attack by virtue of their ability to respond promptly and controllably against even the hardest of military targets. Second, ICBMs introduce complexity and uncertainty into Soviet attack plans because different types of attacks are required to defeat our ICBM, submarine, and bomber forces. Third, the ICBM force serves as a hedge against possible vulnerability in our submarine force (e.g., a Soviet breakthrough in anti-submarine warfare).

2. **Current Systems**: **Our present ICBM force is more than two decades old. The Titan II missiles were deployed in the early 1960s and the Minuteman shortly thereafter. As a result of the age and the associated maintainability problems, the Titan IIs are being retired and the Minuteman missiles are undergoing modification to upgrade their capabilities. Our ICBM modernization stems from the need to redress the strategic asymmetry caused by the massive Soviet ICBM build-up which began in the early 1970's. Since then, the Soviet Union has deployed more than 800 SS-17s, SS-18s, and SS-19s that have good to excellent**

accuracy and payloads as large or larger than Peacekeeper's. Meanwhile, more than half of the Soviet ICBM force has been deployed since the last U.S. ICBM deployment.

To address the strategic imbalance, the President endorsed the ICBM Modernization Program in April 1983. The program was recommended by the President's Commission on Strategic Forces (Scowcroft Commission) and subsequently approved by the Congress. This program was built on the recognition that all ICBM tasks cannot be served by a single weapon system. Accordingly, the Commission recommended (1) promptly deploying 100 Peacekeeper missiles in existing Minuteman silos; (2) initiating engineering design of a single warhead ICBM leading to deployment in the early 1990s; and (3) vigorously investigating follow-on basing technologies, including hardened vehicles and silos.

Our present operational ICBM force consists of Titan II and Minuteman II and III missiles. We have retired 34 of our 52 Titan IIs and the remainder will be phased out by October 1, 1987. The mainstay of this force is our Minuteman. Within this weapon system we have a total of 1000 missiles with 50 of the Minuteman IIIs programmed to be replaced by 50 Peacekeepers.

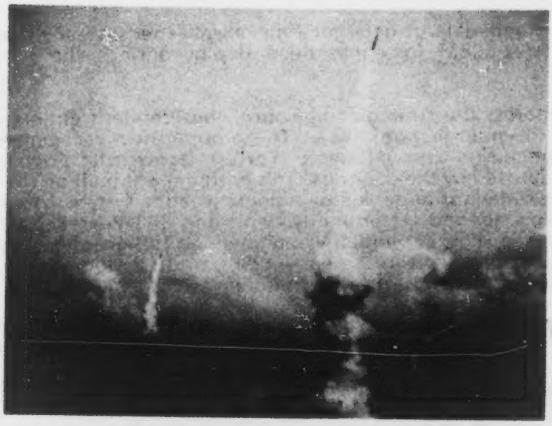
3. Future Systems: Future initiatives in the ICBM area include studies and research which could support alternate basing for the remaining 50 Peacekeeper missiles, research and development on a small ICBM and the technology developments within the Advanced Strategic Missile Systems program.

Fiscal Year 1987 Programs

4. Minuteman Squadrons

a. MISSION: The Minuteman weapon system became operational in the 1960s and now consists of 450 Minuteman II and 550 Minuteman III (50 to be replaced by Peacekeeper). Minuteman has served as a prime nuclear deterrent force for the United States for 23 years and is projected to maintain this role into the next century. The program element (PE) provides for operations and maintenance of the deployed force as well as improvements and modifications to the Minuteman force to enhance its contribution to strategic deterrence.

b. STATUS: Enhancements and modifications are being made to the Minuteman weapon system to maintain viability of the force, to improve operating efficiencies, and to maintain compatibility with other Single Integrated Operational Plan (SIOP) forces. On the missile itself, the motors for the second stages of the Minuteman II and III boosters are being washed out and repoured and the Minuteman III, Stage 3 motors are being remanufactured to correct an age-related degraded propellant liner condition. The Minuteman II missile guidance set began its Accuracy Reliability Supportability Improvement Program in Fiscal Year 1986 to replace degrading electronic parts, increase accuracy, and provide remote retargeting/expanded execution plan capability. Minuteman III completes a guidance upgrade program in Fiscal Year 1986 to improve its accuracy. A full scale development program begins in Fiscal Year 1987 to add decoys and new chaff to a portion of the Minuteman III force. These penetration aids will ensure the missiles' continued effectiveness against defended targets. On the ground, the Rivet Mile program, which began in Fiscal Year 1985, continues to perform depot level maintenance on launch facilities (LFs) and launch control facilities (LCFs).



DUAL MINUTEMAN II LAUNCH
FROM VANDENBERG AFB, CALIFORNIA

There are numerous Class IV modifications underway or starting in Fiscal Year 1987 to support reliability and maintainability upgrades. The more important of these replace the outer zone security systems at the LFs, replace nonsupportable electronics equipment at the LFs and LCFs, and replace the splice cases in the hardened intersite cable system.

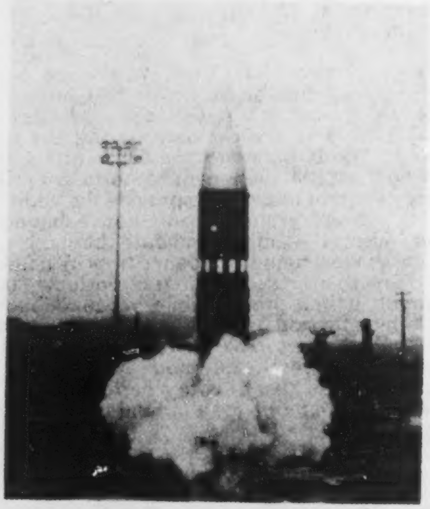
The Single Class V modification continues a program started in Fiscal Year 1984 to procure and deploy new high-density rechargeable emergency batteries in those 200 Minuteman III LFs that have had lithium batteries installed under the Minuteman Extended Survivable Power (MESP) program. The lithium batteries increased the silos' wartime emergency power time by a factor of 15, but they cut the peacetime emergency power time in half. (Because they are expensive and nonrechargeable, their one-time use is saved for wartime.) Correcting this deficiency to avoid damaged equipment and missile off-alert time is a high priority.

Finally, aging support equipment such as transporter-erector vehicles and wing and depot test equipment is being replaced. These and other programs will keep Minuteman a credible part of the nuclear deterrent force beyond the year 2000.

5. Peacekeeper

a. **MISSION**: The main purpose of deploying the Peacekeeper missile system beginning in December 1986 is to more effectively deter Soviet threats of massive conventional or nuclear attack against the United States and our allies. By virtue of its improved damage expectancy against hardened military targets, Peacekeeper accomplishes several strategic objectives. First, the near-term Peacekeeper deployment begins to offset Soviet counterforce advantages created by the Soviet ability to destroy hardened U.S. land-based targets. Peacekeeper has the range, yield, and accuracy to place at risk all Soviet target types--hardened and unhardened--with the most reliable and responsive leg of the Strategic Triad. Second, deploying Peacekeeper in existing Minuteman silos helps redress the aging problem of the U.S. ICBM force by reducing the risks of a catastrophic age-related reduction in MM III reliability. Third, Peacekeeper deployment encourages the Soviet Union to negotiate stabilizing arms control agreements by providing a tangible incentive to move toward less valuable deployments. Thus, the Peacekeeper deployment is the first step toward enhanced deterrence, increased strategic stability, and meaningful arms control negotiations.

b. STATUS: The Peacekeeper is a four-stage ICBM configured to deliver up to 10 Mark 21 reentry vehicles to different targets. Peacekeeper uses a state-of-the-art Advanced Inertial Reference Sphere guidance system to attain its high degree of accuracy. Peacekeeper is more accurate, carries more warheads, has greater range, and is more resistant to nuclear effects than other ICBM systems currently in the U.S. inventory.



PEACEKEEPER INTERCONTINENTAL BALLISTIC MISSILE FIRST SILO TEST LAUNCH

The Peacekeeper research and development flight-test program, consisting of 20 planned launches, was initiated at Vandenberg AFB, California, in June 1983. Phase I of the flight test program, completed in June 1984, was designed to test missile functional performance. Phase II is designed to test missile/reentry vehicle capabilities and silo integration. Ten launches, all successful, have been completed to date. Flight test 9, the first launch from an operationally configured silo, was successfully completed in August 1985. Flight test 10, the second silo launch, was successfully completed in November 1985. Peacekeeper accuracy is outstanding with demonstrated results considerably better than the design requirement.

The Peacekeeper missile deployment in southeastern Wyoming will be supported by the 90th Strategic Missile Wing at F.E. Warren AFB, close to Cheyenne. Fifty Peacekeeper missiles will replace 50 Minuteman missiles in existing silos. Very little silo structural modification will be needed. Initial Operational Capability of ten missiles is scheduled for December 1986. The 50 missiles will be fully deployed in existing silos by December 1988.

Full scale development for basing began in June 1983. A draft Environmental Impact Statement was issued in October 1983. Public hearings were held in early November, and the final statement was released in January 1984. Construction of support facilities began in mid-1984 and above ground silo modifications began in early 1985.

In 1984, the Peacekeeper program began the transition from full scale development to production. Twenty-one production missiles were authorized in Fiscal Year 1984; an additional 21 were authorized in Fiscal Year 85. Fiscal Year 1986 production has been set at 12 missiles will be and a total of 50 missiles deployed in existing Minuteman silos.

Congressional concern in Fiscal Year 1986 with the issue of vulnerability of existing silos resulted in an Fiscal Year 1986 Authorization limitation of 50 Peacekeepers deployed in existing Minuteman silos. While individual existing silos would be vulnerable to large nuclear detonations, the overall retaliatory capability of our strategic TRIAD poses a formidable attack problem for any adversary, thereby assuring the ICBM component has sufficient survivability to carry out its prompt retaliatory deterrent mission. To provide the additional survivability desired by the Congress, we are examining alternative basing modes for the additional Peacekeeper missiles., Eight candidate basing modes are under consideration and include; shallow tunnel (hardened trench), hardened Minuteman silos, superhard silos, superhard silo with transportable launcher, mobile encapsulated (carry hard) basing, rail mobile, ground mobile, and deep underground basing. These basing options were selected for further study previously because of recent advances in basing technology. We do not intend to relook old studies, but plan to answer the question "What's new?". Study of these basing modes will continue in Fiscal Year 87 with a narrowing of alternatives to the most promising candidate in preparation for a potential Fiscal Year 1988 Full Scale Development (FSD) start.

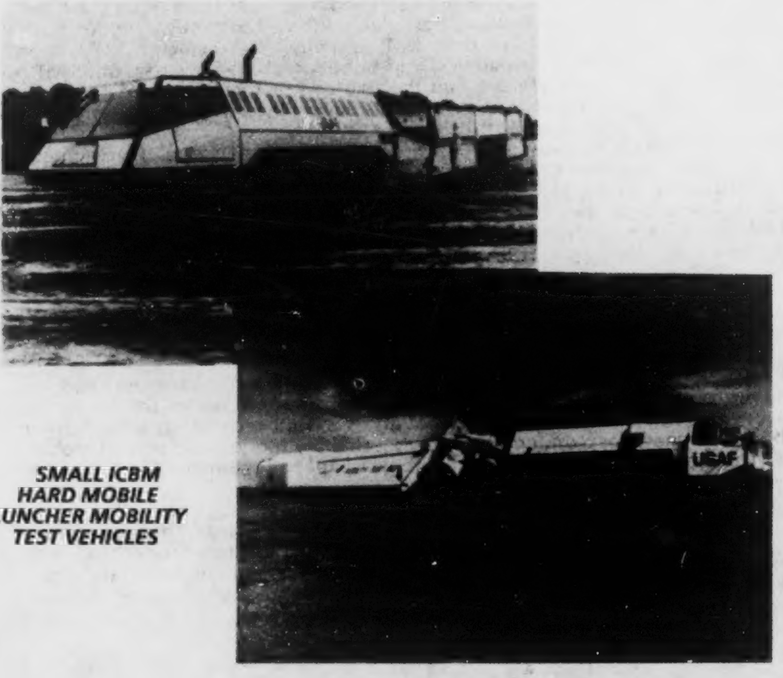
Peacekeeper production, deployment and support activities are on schedule and within cost. Fiscal Year 1987 funding will be used to continue missile production, conduct testing and evaluation, construct support facilities, and plan for deployment of the second 50 Peacekeepers.

6. Small ICBM

a. MISSION: The main purpose of deploying the Small Intercontinental Ballistic Missile (ICBM) is to seek improved stability in the ICBM force through reduced target value and improved survivability. By virtue of its improved survivability, single war head characteristics, and prompt hard target kill, the Small ICBM accomplishes several strategic objectives. First, improved survivability improves deterrence by increasing Soviet uncertainty that they could successfully attack the U.S. Second, the Small ICBM is capable of threatening unacceptable damage to those hardened Soviet assets most critical to Soviet war aims. Finally, single reentry vehicle (RV) weapons will fulfill critical missions throughout the conflict spectrum. In conjunction with Peacekeeper, SICBM is an important step forward enhanced deterrence.

The Department of Defense and the Air Force are continuing the development of the Small ICBM and hardened mobile launcher. In July 1983, the Air Force convened the Small Missile Independent Advisory Group (Schriever Commission). The Schriever Commission recommended a three phased program approach which included concept definition, pre-full scale development, and full scale development phases. In July 1984 the Air Force appointed a general officer to direct the Small ICBM Program Office development and acquisition strategies for both the Small ICBM and basing technology programs.

The President's Commission on Strategic Forces (Scowcroft Commission) recommended that the Air Force develop a small single RV missile. This missile will be flexible in terms of basing and potentially more survivable than current systems. The Small ICBM will present a relatively low-value target and require a high exchange ratio from the attacker. Therefore, in addition to hard target capability and responsiveness comparable to Peacekeeper, the Small ICBM will be survivable, stabilizing, and further enhance the arms control process.



SMALL ICBM HARD MOBILE LAUNCHER MOBILITY TEST VEHICLES

In order to meet the Small ICBM goals set forth by the President's Commission on Strategic Forces, the Office of the Secretary of Defense and the Air Force are directing top-level management attention to the program. The OSD Small Missile Review Panel, the SecDef Periodic Review, and the Small Missile Steering Group were established to ensure an aggressive Small ICBM program which would meet critical milestones and result in a 1992 Initial Operational Capability.

b. STATUS: The concept definition phase began in 1983 and was completed in late 1984. It involved building on Peacekeeper advanced technology as well as assessing alternative technologies. As a result of the concept definition, pre-full scale development began in late 1984. To date, more than 18 Small ICBM competitive contracts have been awarded for this effort. They encompass efforts in propulsion, hard mobile launcher, hard silo, guidance and control, launch control system, and assembly, test, and system support. The propulsion contractors have tested full scale prototype motor stages, exit cones, thrust vector control systems, and internal and external insulations. Full-scale stage testing will continue in 1986. The full scale development phase for the basing mode or modes will begin in Fiscal Year 1987. This program will lead to flight testing in 1989 with IOC in 1992.

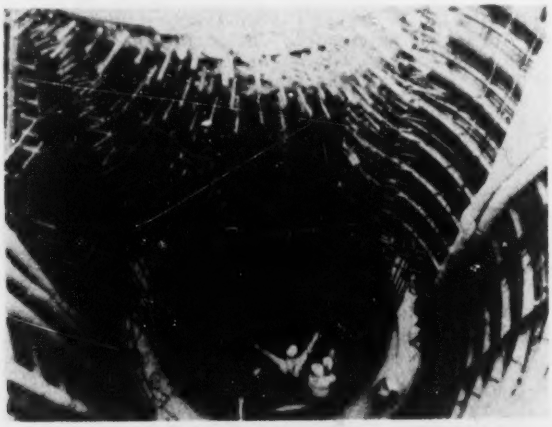
To date, we have tested scale models of the hard mobile launcher (HML) at the DNA sponsored Direct Course (9-83) and the Minor Scale (6-85) High Explosive Event as well as in the 20-ft diameter shock tube at the Sandia Blast test facility. The hard mobile launcher hardness validation will continue in 1986. Both Martin Marietta and Boeing have built HML Mobility Test Vehicles (MTV) that replicate HML size, weight, horsepower, and handling characteristics. Both MTV rollouts occurred in September 1985 and the two contractors began MTV testing. The Air Force will begin mobility testing in early 1986 on these two vehicles.

Efforts in the Small ICBM Guidance research and development continue in initial development. To decrease system weight, decrease reaction time without degrading system accuracy, and reduce unit cost, we are evaluating three alternative inertial navigation guidance systems as competitors to the baseline modified Peacekeeper Advanced Inertial Reference Sphere (AIRS). Alternatives include two ring laser gyro and one stellar inertial system. This competitive guidance effort will continue thru Fiscal Year 1988 when a primary guidance system will be selected.

7. Advanced Basing Technologies

a. MISSION: The Scowcroft Commission recognized the need for continuing to evaluate a broad range of candidate basing modes for follow-on missile deployment. We are evaluating several technologies including superhardened silos, deep undergound basing, shallow tunnel, and several mobile modes. These technologies are applicable to Peacekeeper or Small ICBM follow-on deployments.

b. STATUS: The Air Force and Defense Nuclear Agency began a three-year program in 1983 to demonstrate and validate superhard silo technologies through large-scale tests. Testing of silo component materials began in 1983 and continued through 1985 with impressive results. Congressional restraints on funding have reduced the scope of the effort and have eliminated further ultrahard testing planned for 1986. Nonetheless, subsize silo test and component tests have been quite successful, providing confidence that hardness in excess of 50 times existing silo hardness is achievable.



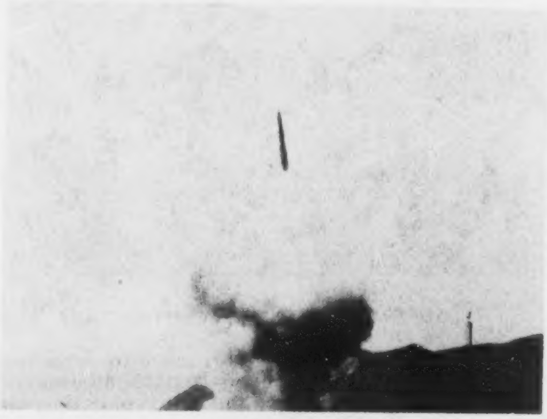
SUPERHARD TEST SILO CONSTRUCTION

Significant progress was also made in deep basing technology development and subsystem engineering and demonstration. Technology development efforts are concentrated on the effects of nuclear weapons on deep underground facilities; evaluation of alternative power, heat sink and life support systems; through-the-earth communications; and improving tunneling technology. Subsystem engineering efforts successfully demonstrated the technology for missile egress, launch, power, and heat sink systems. Fiscal Year 1987 funding will support further efforts involving concept definition and system configuration.

8. Advanced Strategic Missile Systems

a. **MISSION**: Advanced Strategic Missile Systems (ASMS) is our continuing program that develops, applies, and proves ballistic missile technologies by conducting advanced development for operational ICBM applications. Our early development work is pursued to gain confidence in engineering feasibility of new technologies and concepts to ensure their readiness for full scale development (FSD) and to provide timely solutions for identified ICBM force deficiencies, mission changes, and evolving threats. The ASMS mission also includes conducting tri-Service intercontinental range flight testing of exploratory reentry vehicles (RVs) and penetration aid systems.

b. **STATUS**: Although ASMS technology supports ballistic missile, reentry, penetration, and basing system/subsystem developments, the majority of the Fiscal Year 1987 ASMS program focuses on penetration systems. The objective of these programs is to develop and flight test ICBM penetration system options to provide effective counters to ongoing Soviet ballistic missile defense (BMD) upgrades. Penetration options, such as RV replica decoys (active and passive), chaff, optical countermeasures, defense suppression vehicles, and evader maneuvering reentry vehicles will address the near-term BMD threats as well as develop the critical technologies to counter projected BMD capabilities. The passive decoy and improved chaff will complete advanced development and flight testing this year and transition into full scale development for the Minuteman III system. ASMS efforts are also being conducted to increase our RV accuracy and survival as a hedge against Soviet target hardening and expanded BMD capabilities.



FLIGHT TESTING OF EXPERIMENTAL PAYLOAD

C. Manned Bombers

1. **Rationale**: The second and most flexible and versatile leg of the TRIAD is the manned bomber. The bomber interacts with the ballistic missiles to enhance overall force effectiveness. It provides insurance against an unexpected failure or reduced effectiveness of other strategic force elements. The manned bomber is recallable, reusable, and can deliver a wide range of weapons from nuclear to conventional gravity bombs, maritime ship attack missiles, short range attack missiles, and cruise missiles. The bomber can be launched for a show-of-force and it can be dispersed to a variety of locations. The manned bomber has the added feature that it can make real-time damage assessment during attack and it can also be redirected while in flight. The manned bomber has the most near-term capability to locate, identify, and strike strategic relocatable targets. Because the bomber carries a mix of gravity weapons and cruise missiles, it severely complicates the Soviet air defense problem.

2. Current Systems: For over a quarter of a century, the B-52 has served as the backbone of our strategic bomber force. The current B-52 fleet of 241 aircraft is augmented by 56 FB-111As.

Our bombers are capable of striking targets across a broad spectrum of conflict. In addition to their traditional nuclear role, bomber aircraft also have a conventional and maritime role. The B-52 has been modified to carry large conventional payloads of gravity weapons as well as the Harpoon missile. This has expanded the B-52's role to include sea lane defense, mine laying, and sea surveillance.

The B-52, as the mainstay of our bomber leg of the Triad, provides those unique characteristics which only a strategic bomber can provide: flexibility to respond with conventional or nuclear weapons in a tactical or strategic role on land or at sea and meet last second contingencies that arise in the target area; recallability after launch, and reusability with minimum turnaround time.

Because of the age and limitations of our existing bomber force, we have initiated a phased modernization program for our manned bomber. The B-52 has been modified to carry the Air Launched Cruise Missile (ALCM), assuming a role it will maintain into the 1990s. The newer B-52H aircraft will be capable of carrying 20 cruise missiles, 12 externally and 8 internally. By the end of the decade, the B-1B will be our primary penetrating bomber while the B-52 assumes a primary role as a cruise missile carrier with an added conventional role.

3. Future Systems: There are several programs that are designed to examine our future bomber requirements. These programs are integrating future war-fighting concepts and the necessary technologies to conceptualize these future weapon systems. Because of the sensitive nature of these programs, most of the work is classified and cannot be released through this document.

The Advanced Technology Bomber (ATB) program is part of the President's strategic modernization program. That program, announced on October 2, 1981, calls for the production of 100 B-1Bs and a continuing vigorous research and development program for the ATB.

The two bomber program is the most prudent approach to revitalize our bomber force. While the ATB will provide an important and significant improvement in our ability to deal with advanced air defense, it will not be available until the 1990s. The B-1B will be operational in 1986 and provide a near term response to redress the strategic balance. The B-1B will be able to penetrate Soviet defenses well into the 1990s allowing us to shift the oldest B-52s to less vulnerable and less demanding roles as standoff cruise missile carriers and conventional bombers. The older ALCM B-52Gs will be retired as the ATBs come on line. During the same time frame, the B-1B can shift to a shoot then penetrate role to compensate for improved Soviet defenses.

STRATEGIC OFFENSE

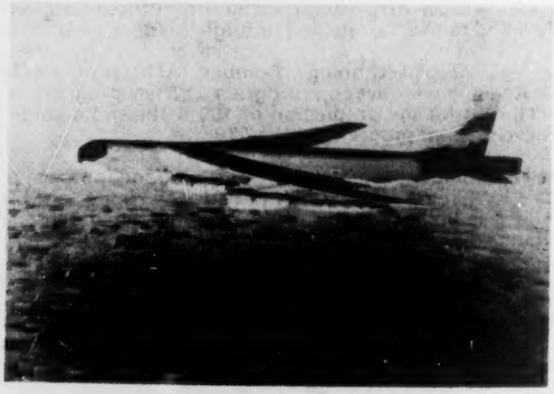
B-52 – PENETRATE —— SHOOT/PENETRATE—STANDOFF ———— (OLDEST RETIRE) ————
B-1B – PENETRATE ———— SHOOT/PENETRATE ————
ATB — PENETRATE ————

STRATEGIC BOMBER MODERNIZATION PROGRAM

Fiscal Year 1987 Programs

4. B-52

a. MISSION: The primary role of the B-52 bomber is to deter war through its capability to effectively conduct operations throughout the spectrum of conflict. The primary mission area in which the B-52 will be employed is strategic airborne strike in support of the bomber leg of the strategic Triad. Collateral mission areas include elements of tactical land warfare, tactical air warfare, naval warfare, and theater nuclear warfare. The B-52's inherent capability to carry a wide variety of munitions over long distances provides flexibility in the nuclear and non-nuclear scenario.



B-52H BOMBER

b. STATUS: We continue to modernize the B-52 to maintain it as a viable penetrator into the early 1990s. Major new capabilities will allow the B-52 to stand off from heavily defended areas and attack targets with conventional or nuclear weapons. The major B-52 modernization programs improve the electronic

countermeasures, upgrade the airborne radar, and add internal cruise missile carriage capability. In the conventional arena, 69 non-ALCM B-52G aircraft will assume the bulk of the conventional commitment. We completed modification of 30 aircraft in June 1985 to carry the AGM-84 Harpoon anti-ship missile. The Strategic Conventional Standoff Capability program will provide these 69 non-ALCM B-52Gs with conventional improvements to put high value targets at risk through the 1990's regardless of the target environment.

5. B-1B

a. MISSION: The B-1B fills the need for a new multirole strategic bomber to be operational in 1986. The B-1B provides improved range and payload for the strategic nuclear bombing and cruise missile launch missions. In addition, the B-1B can perform tactical and strategic conventional bombing missions. The B-1B will serve initially in the penetrating role and later in the cruise missile shoot-and-penetrate role.

b. STATUS: On June 27, 1985, the Strategic Air Command took delivery of its first B-1B. The Fiscal Year 1987 B-1B RDT&E program concentrates on demonstrating and maturing the B-1B's operational capabilities. These activities will be conducted at Dyess AFB, Texas and Edwards AFB, California. The final lot of 48 B-1B's are procured with Fiscal Year 1986 funds. Initial operational capability will occur September 1986, with 15 B-1Bs at Dyess AFB, Texas. Full operational capability occurs with delivery of the 100th aircraft in the Spring of 1988

B-1B BOMBER

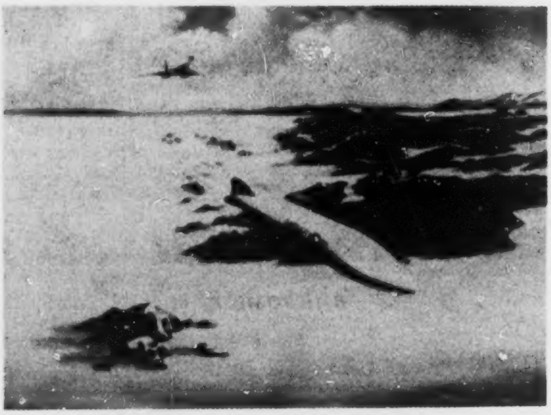
6. Advanced Technology Bomber

a. MISSION: The Advanced Technology Bomber (ATB) will follow the B-1B and is designed to ensure that our Triad force has the advantage of new developments in low observable technology to combat expected advances in Soviet defenses. The ATB program is part of the President's strategic modernization program announced on October 2, 1981. The two bomber program is the most prudent approach to revitalize our bomber force. The ATB will provide a significant improvement in our ability to deal with advanced air defenses.

b. STATUS: At the present time, development and procurement plans remain classified, but we can state that the RDT&E program is adequately funded, and within schedule for an early 1990s initial operational capability. The ATB R&D program is proceeding on schedule and at the fastest prudent pace. When delivered in the early 1990's the Advanced Technology Bomber will provide high confidence that our bombers can continue to penetrate Soviet defenses into the next century as well as providing the flexibility and other unique military characteristics that only a manned strategic aircraft possesses as an instrument for national objectives.

7. Short-Range Attack Missile II

a. MISSION: The Short-Range Attack Missile II (SRAM II) missile will provide an improved nuclear strike weapon to support the penetrating bomber mission. The weapon will replace the aging AGM-69A Short-Range Attack Missile . The B-1B and the Advanced Technology Bomber will be the primary carrier aircraft. SRAM II will provide an effective weapon used at standoff ranges against all classes of targets. Its flight characteristics prevent defense optimization against low signature subsonic weapons/weapon systems. SRAM II will ensure that our bombers are capable of striking multiple targets with a wide variety of weapons on a single mission.



SHORT-RANGE ATTACK MISSILE II

b. STATUS: SRAM II is in the system definition phase. Ten month study contracts were awarded in February 1985 to three competing contractors. Based on contractor data presented at the midpoint of these studies, the Air Force has chosen a rocket powered missile for SRAM II. The contractors then refined their rocket powered designs and are preparing to enter source selection. An initial development contract will be awarded in January 1987. Milestone II is planned for third quarter 1987 with flight test scheduled to begin in third quarter 1989. IOC is planned for Fiscal Year 1992.

8. Advanced Cruise Missile

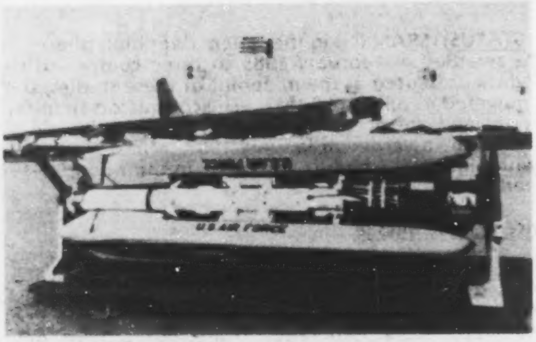
a. MISSION: To provide our bombers with a survivable standoff capability, the Advanced Cruise Missile (ACM) is being developed as a second generation cruise missile. The Advanced Cruise Missile (ACM) is a Presidentially approved, SECDEF directed, second generation cruise missile being developed to provide a logical and timely update to our ALCM force. In recognition of a finite cruise missile force and evolving Soviet capabilities, the ACM's substantial improvements in signature level, range, accuracy, and targeting flexibility will enhance the long-term effectiveness of our airbreathing force.

b. STATUS: We are continuing to develop the advanced cruise missile at the fastest prudent pace. The ACM will be deployed in a mix with the current generation cruise missile to maintain our bombers as a viable deterrent force.

A competitive source selection was concluded in April 1983 with the Full Scale Development contract for the ACM awarded. At the same time, a decision was made to procure an additional 240 AGM-86Bs in Fiscal Year 1984. A coordinated development/production approach will acquire the ACM at the fastest prudent pace.

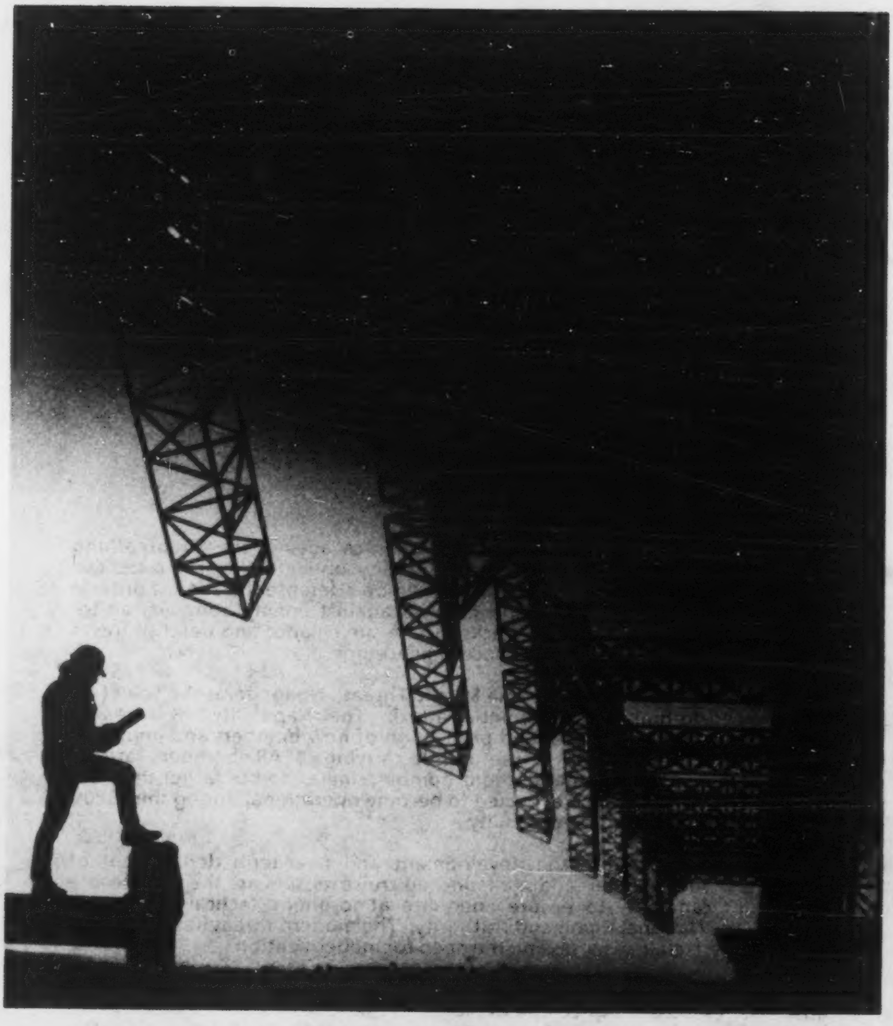
9. Common Strategic Rotary Launcher

a. MISSION: The Common Strategic Rotary Launcher (CSRL) will provide the bomber force with growth potential and flexibility to assure its utility into the 21st Century. The CSRL is a multipurpose internal launcher for the B-52H, B-1B, and the Advanced Technology Bomber (ATB). The launcher will accommodate gravity weapons, Short-Range Attack Missiles, cruise missiles, and future conventional standoff munitions. Initially, the CSRL will be integrated into the 96 B-52Hs and later transferred to the B-1B as force structure changes. The CSRL will carry homogeneous loads of weapons on the B-52H and B-1B. The CSRL will also be compatible with the ATB.



COMMON STRATEGIC ROTARY LAUNCHER

b. STATUS: Ground testing of the CSRL was successfully completed in August 1985 and seven successful flight tests have been completed on the B-52H. In 1986, B-52H flight testing will end and B-1B CSRL flight testing will begin. The production contract for low rate initial production is scheduled to be awarded in February 1986. Full scale production is scheduled to begin in Fiscal Year 1987 leading to a B-52H initial operational capability in the second quarter of Fiscal Year 1990. We plan to procure a total of 104 CSRLs for 96 B-52Hs, which includes two spares at each of four operational bases.



OVER-THE-HORIZON
BACKSCATTER RADAR

DEPARTMENT OF THE AIR FORCE
MCMXLVII
UNITED STATES OF AMERICA

V. STRATEGIC DEFENSE

A. Objectives

Strategic defense forces and systems are key elements of our deterrent posture. These forces form the backbone of our ability to warn of aircraft and missile attacks, monitor potential threatening activities, and defend against atmospheric and space-based threats to U.S. forces. They ensure that our National Command Authority's strategic retaliatory capability will survive any Soviet attempt at a first strike by providing timely, reliable, and unambiguous warning as well as attack assessment and ultimately damage limitation. Strategic Defense forces and systems are concerned with three basic threat areas: air, space and ballistic missile. The following sections address our balanced improvements in timeliness, flexibility, and survivability to counter the threat in the air, space and ballistic missile environments.

B. Atmospheric Surveillance and Defense

BACKGROUND

1. **Rationale**: Defense of North America against the air breathing threat is a joint U.S. and Canadian responsibility under the North American Aerospace Defense (NORAD) Command. Strategic air defense forces must provide timely, credible tactical warning and defense against enemy bombers, air-to-surface missiles and cruise missile attacks. These surveillance and defense forces control access to North American airspace in peacetime.

2. **Soviet Bomber and Cruise Missile Threat**: No longer is the Soviet air threat confined to high altitude bomber attack. Their capability has increased with the introduction and continued production of new bombers and improved air-to-surface missiles. New cruise missile-carrying BEAR bombers are in production. In addition, a new strategic bomber, similar to but larger than our B-1B, called the BLACKJACK, is expected to become operational during the 1980s. It will also have a cruise missile capability.

Most significant is the development and near-term deployment of cruise missiles. The Soviet air and sea-launched cruise missiles are the most severe threat to our capability to ensure adequate atmospheric tactical warning is provided to the National Command Authority. The modern threat has generated renewed interest in air defenses and the need for modernization.

3. **Current Systems:** Most of our operational air surveillance and defense systems were designed and deployed in the 1950's to meet a medium-to-high altitude bomber threat. Over the years, force cutbacks have significantly reduced the number of our radars and interceptor aircraft. Against today's low-altitude bomber and cruise missile threat, the capabilities of these systems are limited to very short ranges. These systems are also becoming increasingly expensive to operate and maintain.

To warn of an air attack today, we have only the aging and limited Distant Early Warning radar stations across northern Alaska, Canada, and Greenland, the Joint Surveillance System radars around the periphery of the continental United States, and some new radars in Alaska. We now have a modern command and control capability for these radars and fighter forces with the deployment of the Region Operations Control Centers.

4. Future Systems: The Over-the-Horizon Backscatter Radar and North Warning Systems are being developed to improve detection in our coastal and northern airspace. Also, an air interceptor modernization program will be initiated in Fiscal Year 1986 and procured in Fiscal Year 1987. Dual emphasis has been placed on improving performance against the modern Soviet bomber and cruise missile threat and reducing the cost of ownership.

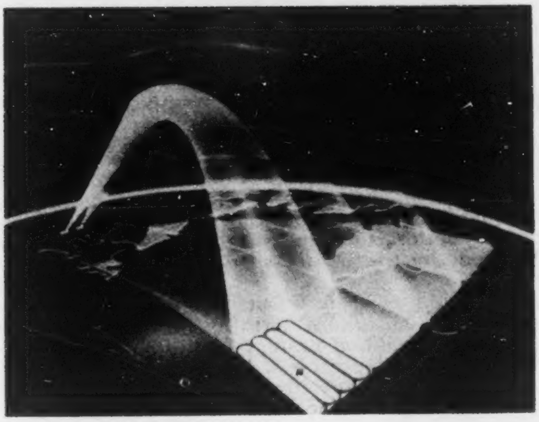
5. Air Defense Master Plan: Our planning for comprehensive modernization culminated in 1982 with a North American Air Defense Master Plan. This plan guided our acquisition strategy for fielding more capable air defense forces in the 1985-95 era. Under the lead of the NORAD commander, the plan was updated and a long-range planning annex completed. The master plan and annex provide guidelines for deployment of a modern air defense system.

Fiscal Year 1987 PROGRAMS

6. Over-the-Horizon Backscatter Radar

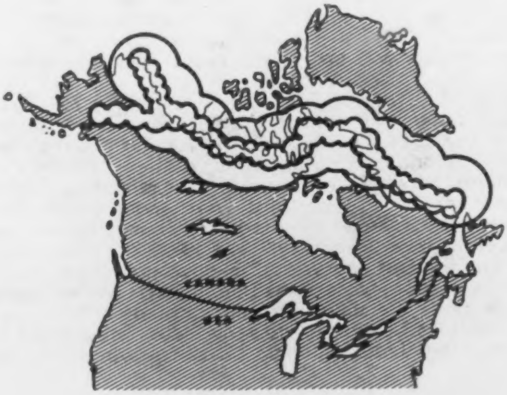
a. MISSION: The Over-the-Horizon Backscatter (OTH-B) radar will provide tactical early warning of an attack on North America by bombers and air-to-surface missiles through long-range, all-altitude, wide-area surveillance of the coastal approaches to North America. It increases warning time for survival of the strategic retaliatory forces and provides decision time for the National Command Authority consistent with ballistic missile warning requirements.

b. STATUS: The Air Force plans to deploy four OTH-B radar systems. The East Coast system will provide surveillance of the Atlantic from the Labrador coast (where it links to the Distant Early Warning line replacement, the North Warning System) to Florida. The initial sector of the East Coast radar system will be delivered to the Air Force in Fiscal Year 1987. The remaining two sectors will be delivered in Fiscal Year 1987. The West Coast radar system will provide surveillance of the Pacific Ocean area from Alaska to Mexico. Procurement of the West Coast system will occur in Fiscal Years 1986 and 1987. The Central system is the third system and will link the East and West OTH-B radar systems. It will provide surveillance of the southern approaches to the United States and will cover Atlantic and Pacific Ocean areas inside the 500 mile minimum range of the East and West Coast systems. Deployment is scheduled in the early 1990s. The Alaskan system will provide air surveillance of the Aleutian Islands. The system will also be deployed in the early 1990s.



OVER-THE-HORIZON BACKSCATTER RADAR

7. North Warning System



NORTH WARNING SYSTEM

a. MISSION: The North Warning System (NWS) program replaces the line of Distant Early Warning (DEW) radar stations. The 31 existing DEW line radars are old, expensive to operate and maintain, and deficient in coverage and radar performance. The NWS will provide credible long-range all-altitude coverage to complement OTH-B surveillance. Its mission is to provide reliable, timely northern tactical warning of a bomber or cruise missile attack on North America. This warning provides the National Command Authority time for decisionmaking and time to initiate strategic forces and strategic command, control, and communications survival actions.

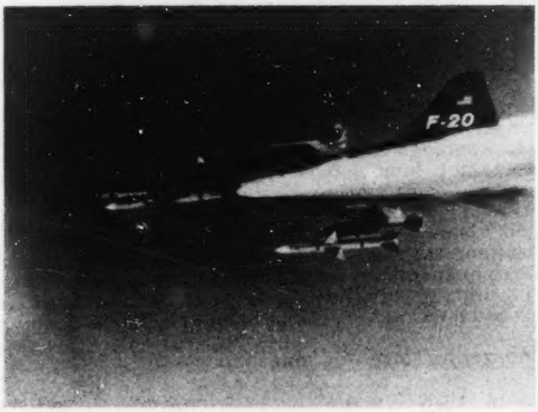
b. STATUS: The North Warning System will consist of a total of 52 radar stations: thirteen long-range, minimally-attended radars and 39 short-range, unattended radars. Upgraded communications to interconnect the radar stations and transmit data to the Joint Surveillance System Region Operation Control Centers will be provided as part of the new program. Development of the new short-range radar began in 1984, while production of the long-range radar is continuing. Field deployment and site construction status in terms of capability/fielded systems are being done under a new joint venture with Canada. In Fiscal Year 1987, communications upgrades and development of the short-range radar stations will continue. Both the long- and short-Range radars will provide a capability to detect and track cruise missiles and improve supportability.

8. Air Interceptor Force Modernization

a. MISSION: The strategic air defense interceptor force consists of 14 squadrons (three active and eleven Air National Guard) tasked to maintain aircraft on alert at U.S. airfields. The interceptors primary mission in peacetime is to intercept and identify unknown aircraft approaching North American airspace. During wartime they can also provide a limited defense against bombers and cruise missiles. The Airborne Warning and Control System will be used to ensure survivable surveillance and to meet command and control requirements for the interceptors.

F-16 FIGHTING FALCON

b. STATUS: To ensure that we are obtaining the most effective interceptor force at the lowest cost, we are holding a competition among an F-16 the commercially developed F-20, and other suitable aircraft. The one time, full and open competition, will be a winner-take-all for approximately 300 aircraft with a planned production start in Fiscal Year 1987.



F-20 TIGERSHARK

C. Space Surveillance and Defense

BACKGROUND

1. Rationale: The second area of concern in Strategic Defense is Space Surveillance and Defense. Space Surveillance is a NORAD, multi-service, multinational responsibility. Space Defense is a U.S. SPACECOM mission only. The demonstrated Soviet threat in space both offensively and in support of land forces requires a robust space surveillance and defense capability.

2. Threat: The Soviets continue to pursue a dynamic and expanding military space program, including an operational antisatellite system and reconnaissance systems. Our current capability to monitor events in space is accomplished entirely with a ground-based system of radars and electro-optical sensors. Current command and control functions provided by the North American Aerospace Defense Command Operations Center are essentially manual and require improvements to support timely coordinated responses to potential military conflicts including threats to our space assets.

3. Current Systems: Our current space surveillance system, SPACETRACK, is composed of three Ground-based Electro-Optical Deep Space Surveillance stations and a number of dedicated and contributing radar stations. These systems are currently limited by line-of-sight. Against the present

and projected future threats these systems must be upgraded to provide improved low-altitude coverage, high-altitude detection and tracking, and an ability to report space events in a timely manner.

4. **Future Systems**: For the far term, our space surveillance advanced development efforts are meshed with the President's Strategic Defense Initiative (SDI). The Air Force goal is to deploy by the mid-1990's, a survivable space surveillance and tracking system which will provide full earth orbit coverage, reduce dependence on overseas basing of sensors and provide timely, operationally responsive coverage of objects and events in space. The Air Force surveillance requirements are incorporated into the SDI technologies development plan. When the technology has matured in the SDI program, it will be transferred to the Air Force, and a system will be developed and deployed.

Fiscal Year 1987 PROGRAMS

5. SPACETRACK

a. **MISSION**: The SPACETRACK program provides us with the ability to monitor space objects and space activities. This surveillance capability is key to giving the National Command Authorities adequate warning time for development of defensive options at all levels of conflict as well as increased survivability of our space assets.

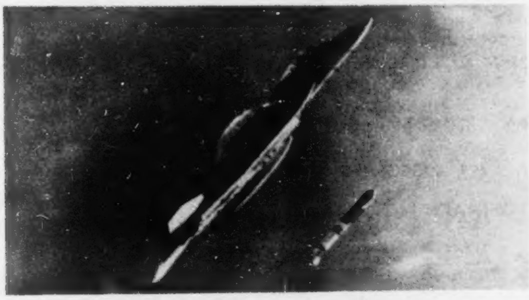
b. **STATUS**: In Fiscal Year 1987 we will complete installation of a Ground-based Electro-Optical Deep Space Surveillance (GEODSS) station at Diego Garcia. This site will be operational in Fiscal Year 1987. Another GEODSS site is planned for Portugal; it will be operational in Fiscal Year 1988. We also plan several other improvements to the SPACETRACK system: installation of a central Pacific Barrier radar, refurbishment of existing radar sensors, improvements to radar calibration techniques, and real-time reporting of SPACETRACK data.

6. Space Defense Systems

a. **MISSION**: The Space Defense program continues development of a low-altitude miniature vehicle antisatellite (ASAT) system. The primary purposes of an ASAT capability are to deter threats to space systems of the United States and its Allies, and within such limits imposed by international law, to deny any adversary the use of space-based systems that support hostile military forces.

b. **STATUS**: On September 13, 1985 the ASAT system was successfully tested against a resident space object. The test was flawless. Fiscal Year 1986 Public Law prohibits us from testing the ASAT against an object in space until the President certifies that the Soviets have conducted a test of their dedicated ASAT. We have restructured our Fiscal Year 1986 test program to comply with the law. In Fiscal Year 1987 we will continue to test the ASAT missile and continue the production verification program.

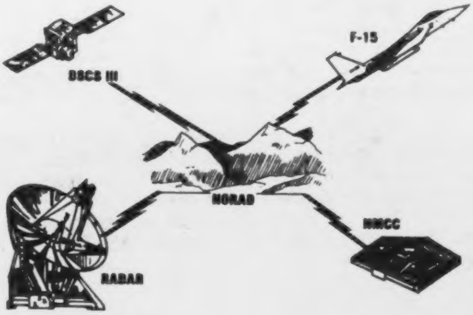
ASAT LAUNCH PICTURE



ASAT LAUNCHED FROM F-15

7. Space Defense Command and Control System

a. MISSION: A Space Defense Command and Control System is needed to satisfy the Presidential directive to improve, in a balanced manner, our space defense capability. Current space defense operations lack real-time response and cannot satisfy new operational requirements. This program is a phased approach supporting effective integration, coordination and management of our evolving space defense resources.

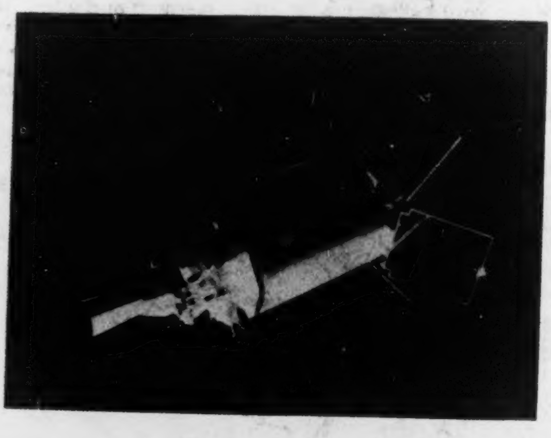


SPACE DEFENSE OPERATIONS CONTROL CENTER

b. STATUS: In Fiscal Year 1987, phased design and development activities in support of the Space Defense Operations Control Center will continue. Upgrades in support of our space surveillance and space defense activities include increased space object cataloging capability to satisfy the processing speed and increased data requirements imposed by the worldwide use of space; semi-automated space warning, counter measure management, evasive maneuver detection, and strike assessment.

8. Defense Support Program

a. MISSION: The Defense Support Program (DSP) is a key element of our nation's strategic defensive posture. This program provides data to the National Command Authority, North American Aerospace Defense Command, and Strategic Air Command. Our development efforts are aimed at increasing the survivability of operational data through design of ground station modifications. These stations will be made compatible with the survivability improvements of follow-on satellites.



DSP ON ORBIT WITH LASER CROSSLINK

b. STATUS: To meet near term requirements, four DSP satellites were procured: two in Fiscal Year 1983 and two in Fiscal Year 1984. In Fiscal Year 1986, we will take delivery of the first of these satellites; continue ground station compatibility modifications, and complete testing on all mobile ground terminals. Multiyear procurement of the next block buy of satellites is planned for Fiscal Year 1987. Fiscal Year 1987 will also see continued research and development with primary emphasis aimed at minimizing/eliminating operational employment deficiencies and vulnerabilities; the development of a more survivable DSP system through upgrades to the Mobile Ground System and satellites, and ensuring adequacy of ground station data processing capabilities.

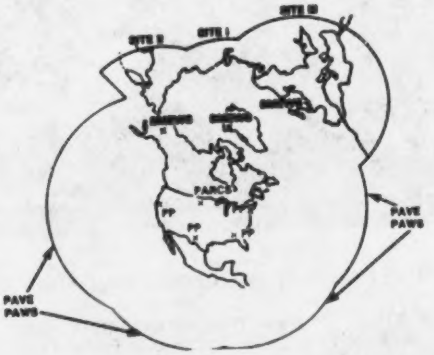
D. Ballistic Missile Warning and Attack Assessment

BACKGROUND

1. Rationale: The third area of Strategic Defense is the ballistic missile area. Management of the ballistic missile tactical warning and attack assessment as an integrated system is necessary to ensure accurate, timely and unambiguous warning, and assessment information to support force survivability and national decisionmaking. These systems provide warning of missiles launched from all fixed-site Soviet intercontinental ballistic missile launch areas and areas historically patrolled by ballistic missile submarines in the northern hemisphere.

2. Threat: Soviet ballistic missile capabilities have improved to the point that we must upgrade our existing BMEWS radars and deploy new Submarine-Launched Ballistic Missile (SLBM) warning systems to ensure adequate coverage and meet the modern, multiple reentry vehicle long-range threat.

3. Current Systems: A network of sensors provide our National Command Authorities with ballistic missile attack warning and assessment. These sensors include space satellite systems; Ballistic Missile Early Warning System sites in Alaska, Greenland, and the United Kingdom; the Perimeter Acquisition Radar Characterization System (PARCS) radar in North Dakota; SLBM detection and warning sites (PAVE PAWS) in Massachusetts and California, and the AN/FPS-85 and AN/FSS-7 SLBM detection radars in Florida.



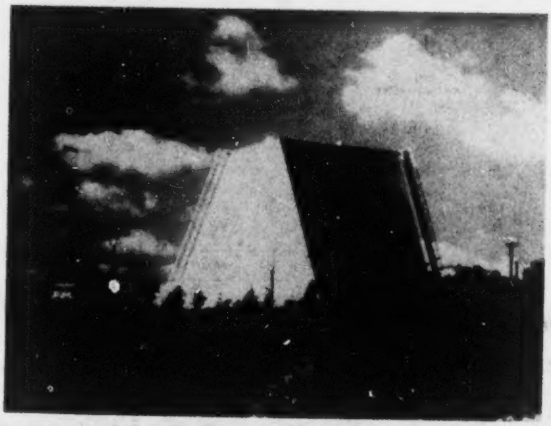
PLANNED BALLISTIC MISSILE SURVEILLANCE SYSTEM

4. Future Systems: PAVE PAWS and BMEWS will continue to provide the primary ballistic missile warning network for the United States. Planned upgrades are discussed in the following section.

Fiscal Year 1987 PROGRAMS

5. PAVE PAWS

a. MISSION: This phased-array radar program is part of the national system for tactical warning and attack assessment of SLBMs. As a complement to our satellite warning systems, it provides confirmation of launch information to the National Command Authorities.



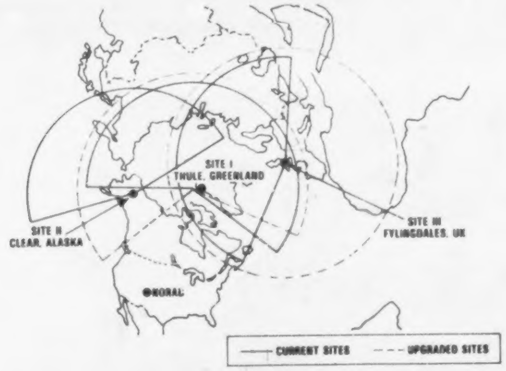
PAVE PAWS

b. STATUS: To accommodate the increased Soviet SLBM threat, two new PAVE PAWS radars are now under construction in the southeastern and southwestern United States. When these sites become operational in Fiscal Year 1987, they will join the existing Northeast and Northwest PAVE PAWS radars and the Perimeter Acquisition Radar Characterization System in North Dakota to form a five-site phased-array SLBM radar-warning network. This network will provide 360 degrees of warning coverage around the United States, and also allow us to close the older, less capable operationally expensive AN/FPS-85, and AN/FSS-7 SLBM radars currently in use.

In Fiscal Year 1987, efforts will continue to complete the basic PAVE PAWS radars at Robins Air Force Base, Georgia and Goodfellow Air Force Base, Texas. Warning capability improvements will also be added to the Robins Air Force Base radar and to existing PAVE PAWS radars at Otis Air National Guard Base, Massachusetts and Beale Air Force Base, California.

6. Ballistic Missile Early Warning System

a. MISSION: The mission of the Ballistic Missile Early Warning System (BMEWS) is to detect and provide warning of a ballistic missile attack on the United States, Canada, the United Kingdom, and Europe. BMEWS is part of the national system for Tactical Warning and Attack Assessment.



BALLISTIC MISSILE EARLY WARNING SYSTEM

b. STATUS: The BMEWS modernization program is replacing existing 20-year old conventional radars at the Thule Air Base, Greenland site with a new solid-state phased-array radar. The new system will become operational in late 1986. This will improve system performance and capacity and provide better pre-impact assessment. In Fiscal Year 1986, we will also begin a similar modernization program at the Fylingdales, England site. In Fiscal Year 1987 upgrade of the Thule site will be completed and an initial operational capability achieved. Software development, system engineering and equipment fabrication will continue on the Fylingdales upgrade effort.

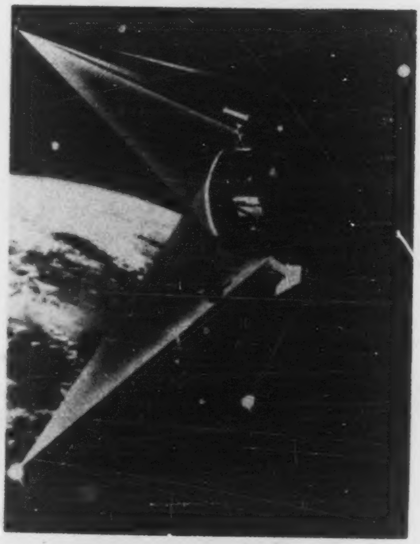
E. Strategic Defense Initiative

1. Rationale: President Reagan's Strategic Defense Initiative (SDI) challenged the scientific community to determine the feasibility of developing systems capable of destroying ballistic missiles in flight, thus providing an alternative to our sole reliance on offensive nuclear retaliation as the basis for strategic deterrence and leading to the ultimate goal of eliminating the threat of ballistic missiles. Following the President's March 1983 SDI speech, the DoD initiated the Defense Technologies Study to define a long-term research and development program. The purpose of this program is to explore the key technologies needed for an effective multitiered ballistic missile defense. The goal of the research program is to develop a base of proven technology that can lead to a defensive system that will destroy Soviet ballistic missiles during the boost, post-boost, midcourse, and terminal phases of flight. In the long run, SDI is intended to

be the crucial means by which the United States and the Soviet Union can safely agree to deep reductions and eventual elimination of ballistic missiles.

2. Current Systems: To carry out the President's long-term research and advanced technology program, DoD created a new defense agency in April 1983, the Strategic Defense Initiative Organization (SDIO). The initiative focuses on technology development in five areas: surveillance, acquisition, tracking and kill assessment, kinetic energy weapons, directed energy weapons, battle management/command, control, communications (C^3) and system analysis, and supporting technologies (lethality, survivability, space prime power, and space logistics).

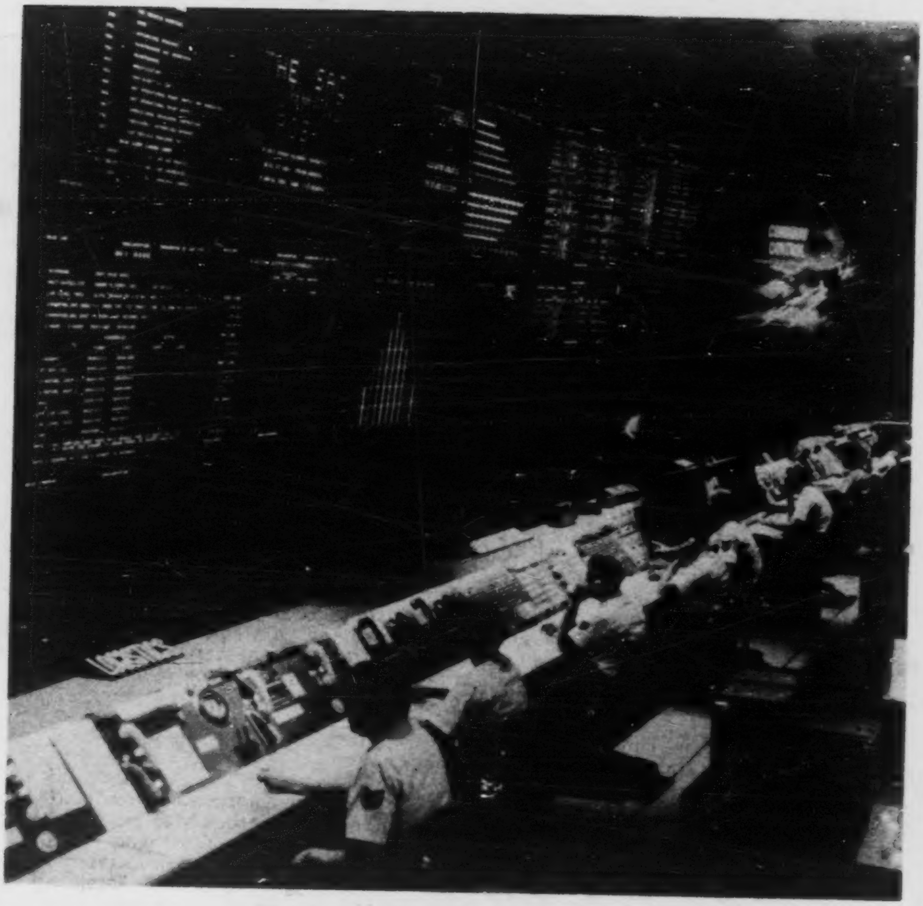
The overall management of SDI is characterized by centralized planning and control with decentralized execution by the Army, Air Force, Navy, Defense Advanced Research Projects Agency, Defense Nuclear Agency and Department of Energy. The Air Force executes approximately 30-35% of the SDI program in the 1985 - 1990 timeframe. Air Force Systems Command through its laboratories and two major product divisions, Electronic Systems Division and Space Division award and manage the programs.



STRATEGIC DEFENSE INITIATIVE
Artist's Concept

3. Future Systems: Several ongoing Air Force programs have been integrated into SDI. The most notable are the Advanced Warning System (now Boost Surveillance and Tracking System), the Space-Based Space Surveillance System (now Space Surveillance and Tracking System), and the Strategic Laser Technology

Program (now part of Directed Energy Weapons). These programs are conducted under SDI in order to meet the broader range of requirements involving ballistic missile defense as well as meeting the currently validated tactical warning/attack assessment and space defense. We are also heavily involved in the Battle Management and C^3 and Supporting Technologies Program. During the 1980s, we will pursue experiments and demonstrations assessing the feasibility of application technologies in support of 1990s development decisions. By pursuing a vigorous research and development program consistent with the Anti-Ballistic Missile Treaty, the United States can be in a position in the early 1990s to make an informed decision to enter full scale development of selected candidate systems. Development of these systems may potentially lead to an effective defense against ballistic missiles for the U.S. and our allies.



STRATEGIC AIR COMMAND
COMMAND POST
OFFUTT AFB, NEBRASKA

DEPARTMENT OF THE AIR FORCE

VI. STRATEGIC COMMAND, CONTROL, COMMUNICATIONS

A. Objectivies

The capability of the U.S. nuclear forces to deter attack depends upon the Soviet's perception of their own capability to successfully launch a first strike. Through our strategic Command, Control, Communications (C^3) systems, we report events that are critical to the survival of strategic forces. Strategic C^3 systems provide the link between the National Command Authority and the Joint Chiefs of Staff, through the Unified and Specified Commands, to U.S. nuclear retaliatory forces.

B. Command, Control, Communications

BACKGROUND

1. Rationale: The National Command Authorities must be provided critical information about a Soviet nuclear first strike to assure timely and direct execution of our national policies and defensive strategy. Strategic C^3 systems link our attack warning and defensive forces and our strategic retaliatory forces to the command centers and to each other. Strategic C^3 systems must be reliable and effective throughout the entire spectrum of conflict.

2. Soviet Threat: Threats to our C^3 systems include sabotage, physical attack, jamming, and effects of electromagnetic pulse.

3. Current System: Our strategic C^3 systems are composed of fixed and mobile command centers and ground, airborne and space communications platforms. Included are the National Emergency Airborne Command Post, Cheyenne Mountain Complex, Post Attack Command and Control System, Strategic Air Command Automated Command and Control System, and the Air Force Satellite Communications system. Some of these systems are becoming increasingly expensive to operate and maintain.

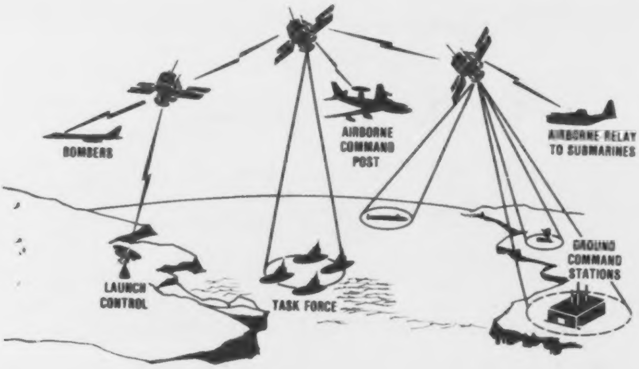
4. Future Systems: Due to its importance to deterrence, the upgrade of the U.S. strategic C^3 systems was made the first priority of the President's strategic modernization program. Although no one system can achieve all the desired characteristics to meet the current and projected threat, a proper mix of ground-based and satellite systems, along with redundancy of critical C^3 nodes, will provide high confidence that our strategic C^3 systems would survive and endure through the trans- and post-attack periods.

STRATEGIC COMMAND, CONTROL, COMMUNICATIONS

Fiscal Year 1987 PROGRAMS

5. Milstar

a. MISSION: Milstar will provide worldwide, two-way, secure, highly jam-resistant, survivable, and enduring voice/data communications for the National Command Authorities. This multi-service system will enable the President and the Commanders-in-Chief to direct strategic and tactical forces through all levels of conventional and nuclear conflicts. Milstar is a pivotal part of the President's strategic modernization program and has been designated as a program of the highest national priority.



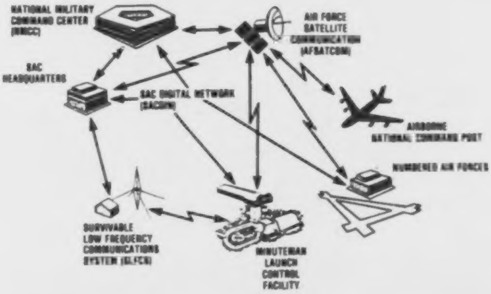
MILSTAR

b. STATUS: Currently the Air Force depends on the Air Force Satellite Communications system for long-range strategic communications. This ultra-high frequency system has limited jam resistance and physical survivability. Milstar will operate at extremely high frequency (EHF) and will provide a much more survivable and enduring communications capability while significantly increasing the number of available communications channels. The Air Force is responsible for the satellite which is now in its detailed design phase. The Navy and Army are responsible for seagoing and most ground satellite communications terminals, respectively. The Navy and Army are expected to enter full scale development contracts in Fiscal Year 1986. The Air Force is responsible for all airborne and some ground terminals. The Air Force terminal program began its last stage of development in June 1985 which will result in terminals for qualification and testing in Fiscal Year 1987. The Milstar system is in full scale development.

STRATEGIC COMMAND, CONTROL, COMMUNICATIONS

6. Strategic Air Command Digital Network

a. MISSION: Strategic Air Command Digital Network (SACDIN) will replace the data transmission subsystem of the Strategic Air Command Automated Command and Control System (SACCS). The present data transmission subsystem of SACCS is based on 1950's technology and is becoming very difficult to maintain. Improvements include automated communications processors, linked together initially by a dedicated line network, and in the 1990 timeframe by the common user Defense Data Network, to meet SAC's requirements for high-speed message delivery. SACDIN will provide rapid, secure transmission of emergency action messages and status reports of SAC's aircraft and missile forces.


NATIONAL MILITARY COMMAND CENTER (NMCC)
AIR FORCE SATELLITE COMMUNICATION (AFSATCOM)
SAC HEADQUARTERS
SAC DIGITAL NETWORK (SACDIN)
AIRBORNE NATIONAL COMMAND POST
NUMBERED AIR FORCES
SURVIVABLE LOW FREQUENCY COMMUNICATIONS SYSTEM (SLFCS)
MINUTEMAN LAUNCH CONTROL FACILITY

STRATEGIC AIR COMMAND DIGITAL NETWORK

b. STATUS: Production and fielding of SACDIN communications processors began in Fiscal Year 1985. Total production will include 135 terminals. Full operational capability is scheduled for late Fiscal Year 1987.

7. Aircraft Alerting Communications Electromagnetic Pulse Upgrade

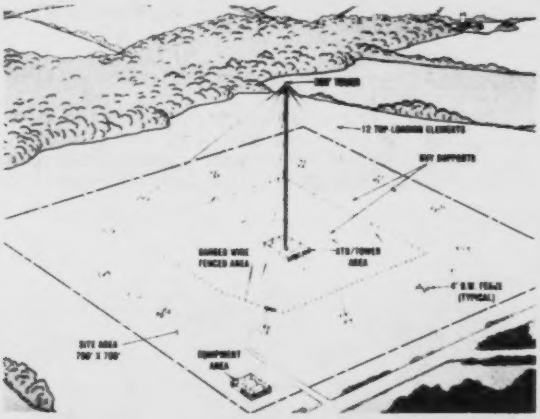
a. MISSION: The Aircraft Alerting Communications Electromagnetic Pulse (AACE) upgrade will provide shielded enclosures, electromagnetic pulse (EMP) hardened consoles, and EMP hardened power supplies for selected electronic equipment at SAC command posts supporting aircraft operations. The AACE upgrade will also provide EMP event detectors at each command post.

b. STATUS: In Fiscal Year 1986 initial operational tests and evaluations will be completed and the first of 24 AACE production units will be delivered. Deliveries and installations will continue through Fiscal Year 1987 at a rate of approximately one base per month. Installations will be completed by Fiscal Year 1989.

STRATEGIC COMMAND, CONTROL, COMMUNICATIONS

8. Ground Wave Emergency Network

a. MISSION: The Ground Wave Emergency Network (GWEN) is a part of the President's strategic modernization program and will provide assured communications between the national command authority, major command centers, missile warning sites, and U.S. based nuclear forces. Assured communications are essential to reduce the temptation for a preemptive first strike on the United States. Survivable communications are provided through a network of radio relay stations that interconnect user terminals at those locations.



GWEN TOWER
Artist's Concept

b. STATUS: Full scale development of the prototype network, including relay stations, input and output ground and airborne terminals, and receive-only terminals, began in Fiscal Year 1983 and will continue into Fiscal Year 1986. During Fiscal Year 1986, prototype network testing will be concluded. In Fiscal Year 1986, we will conduct initial operational test and evaluation of the GWEN network. In Fiscal Year 1987 we will continue missile and airborne terminal prototyping and begin development of portable receive only terminals. We will also begin production and installation of the relay node stations. Full operational capability is planned for Fiscal Year 1990.

9. Minimum Essential Emergency Communications Network

a. MISSION: The Minimum Essential Emergency Communications Network (MEECN) system ensures delivery of critical messages under stressed conditions. Current projects will upgrade or provide new equipment required for mproved dissemination of emergency action messages through long-range urvivable, secure data communications.

b. STATUS: We will continue in Fiscal Year 1986 the development of diversity reception equipment for deployment aboard worldwide airborne command post aircraft and at selected ground sites. This new equipment will upgrade and replace existing very low frequency/low frequency transmist application. Communication range, message accuracy, and transmission time will be greatly improved. Also, development will continue for the very low frequency/low frequency miniature receive terminals for bomber aircraft. These receive terminals will provide a new communications link for bombers that will be unaffected by atmospheric disturbances. In Fiscal Year 1987 full scale development will continue and flight testing will begin on the miniature receiver terminals. Full scale improvements to a higher power transmitter/dual wire antenna system will begin and improvements to our current Survivable Low Frequency Communication System will continue.

10. Worldwide Airborne Command Post

a. MISSION: The EC-135 airborne command post provides an airborne operations center for survivable command and control of our nuclear forces. These aircraft, along with E-4B National Emergency Airborne Command Post aircraft, form the basis of the Worldwide Airborne Command Post system.

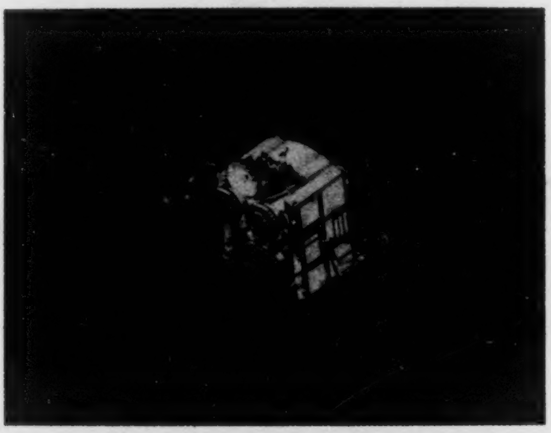
E-4B NATIONAL EMERGENCY AIRBORNE COMMAND POST

b. STATUS: With the increasing age of the EC-135 Post Attack Command and Control System aircraft and the national emphasis on strategic communications capabilities, the Air Force has developed plans to modernize these aircraft. Additionally, we are currently conducting trade studies and preparing an acquisition plan for phasing in a replacement system. Major modifications are planned for the EC-135 aircraft in Fiscal Year 1987. These modifications include continuing the ultra-high frequency/frequency division multiplex replacement, the initial Milstar transition satellite communications terminals and the Peacekeeper upgrades to Airborne Launch Control Center aircraft. Other enhancements to be programmed in subsequent years include the full Milstar capability, Ground Wave Emergency Network terminals, improved low frequency/very low frequency radios and antennas, and installation of the Nuclear Detonation Detection System terminals. Also in Fiscal Year 1987, we will begin installation of several classified communications systems for the E-4B command post aircraft. The E-4B will receive the initial Milstar modification as well as Nuclear Detonation Detection System terminals, Ground Wave Emergency Network terminals, and the improved low frequency/very low frequency equipment.

11. Defense Satellite Communications System

a. MISSION: Defense Satellite Communications System (DSCS) provides super high frequency satellite communications for secure voice and high data rate transmissions to support both defense and diplomatic users.

b. STATUS: In Fiscal Year 1984 we initiated an expanded advance buy of parts for seven DSCS III satellites. In Fiscal Year 1985 we received authority to increase the scope of this contract to a full multiyear production contract. The Fiscal Year 1986 and 1987 budget requests provide funding for two satellites each year, and continues advance procurement for the remaining vehicles.

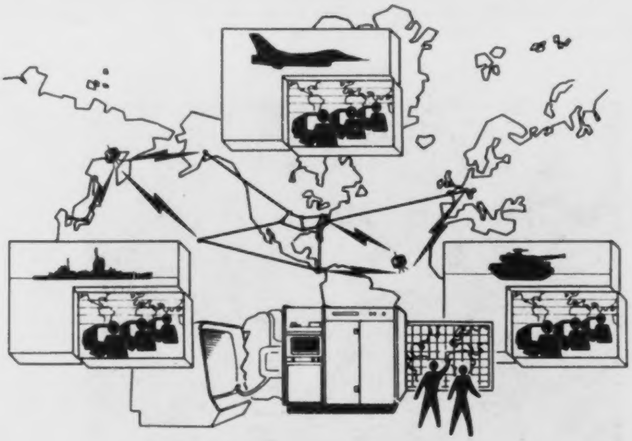


DSCS III ON ORBIT

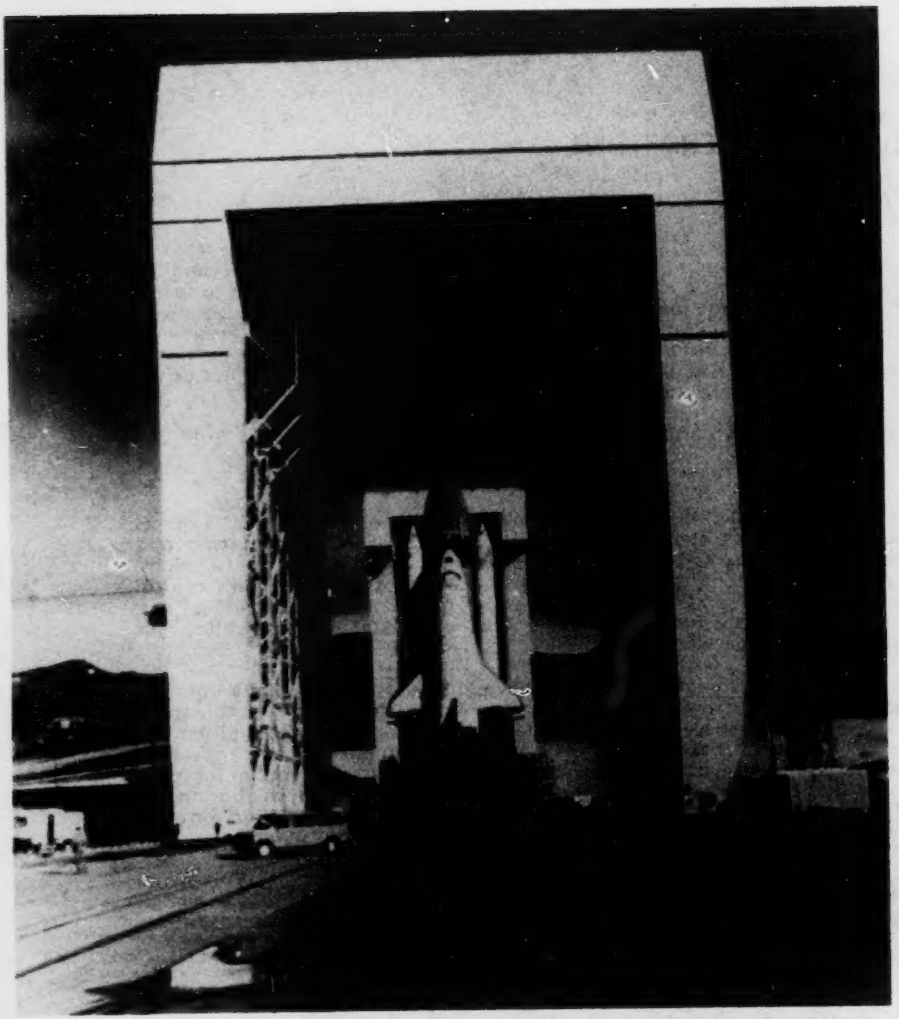
12. WWMCCS Information System

a. MISSION: The WWMCCS Information System (WIS) modernizes the Worldwide Military Command and Control System (WWMCCS) standard automatic data processing hardware and software. WIS-provided automated command and control (C2) support for the National Command Authorities, the Joint Chiefs of Staff, the Unified/Specified/Component Commanders, and the Service headquarters will be used to plan, execute and monitor the mobilization, deployment, employment and sustainment of U.S. Forces worldwide. The evolutionary program will deploy three blocks of capability: (1) Block A provides a transition architecture and automated message handling, (2) Block B provides modern, flexible, database-supported software, host computers and implements the transition to the modernized joint operations software, and (3) Block C provides additional C^2 software capabilities not deployed as part of Block B.

b. STATUS: Block A local area network and automated message handling full scale development, integration and development testing will continue through Fiscal Year 1987. Following operational test and evaluation in Fiscal Year 1988, Block A capability will be deployed and an initial operational capability will be achieved. Prototype development of joint mission software (Block B) is planned for Fiscal Year 1987. Full scale design and development will continue into Fiscal Year 1988. The Joint Mission Hardware Contract is planned for award in Fiscal Year 1987, also. WIS research, development and test is funded by the Army, Navy and Air Force. The Air Force has the lead in development and acquisition.



WWMCCS INFORMATION SYSTEM



SPACE SHUTTLE AT VANDENBERG LAUNCH SITE

VII. SPACE OPERATIONS

A. Objectives

The Air Force objectives in space include: pursuing a vigorous research and development program to give us future options in space; providing an expendable launch vehicle to complement the Shuttle for assured access to space; improving the reliability, maintainability, and supportability of our space assets; achieving an operational antisatellite capability compatible with the President's pledge to seek the strictest possible agreement, which is both verifiable and in the national security interests, and continuing to exploit the unique attributes of the Space Shuttle as they relate to military applications in space.

B. Space Launch and Operations

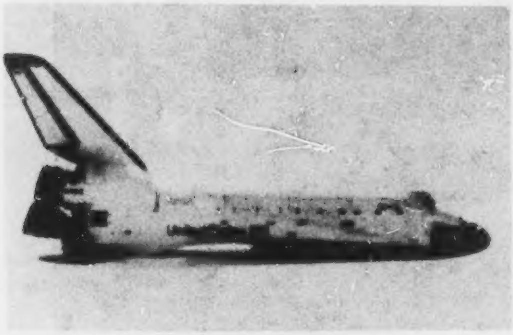
BACKGROUND

1. Rationale: In order to maintain our national security, DOD acquires and operates space systems and pursues advances in related research and technology development. Our current space systems support a variety of functions, such as communications, tactical warning and attack assessment, arms control verification, weather and space defense. The global access capability of our satellites coupled with their efficiency in terms of mission and cost, reflect our primary reasons for space activities.

2. Soviet Threat: The Soviets have long known the military utility of operating in space and have committed significant resources toward a sizable space presence. The Soviet space program is under control of the military establishment. Moreover, the Soviets have spent great sums to develop a robust space presence that supports specific military and political objectives and provides options for space initiatives that could significantly modify their strategic posture in relation to the U.S. The Soviets today have the only operational antisatellite weapon and continue to develop the most extensive and flexible launch capability in the world.

3. Current Systems: The Space Transportation System (STS) is the national program for providing U.S. Government and commercial users, as well as foreign users, routine access to space. The STS consists of the Space Shuttle, upper stages, and Spacelab. The National Aeronautics and Space Administration (NASA) is responsible for developing and operating the Shuttle.

A continuing need exists to provide a highly reliable means of placing critical Department of Defense satellites into their required mission orbits. Providing this assured access to space will be accomplished through the use of the existing and planned expendable launch vehicles such as the Titan II, Titan III, Atlas E, the STS, and the Complementary Expendable Launch Vehicle system.



SPACE SHUTTLE

4. Future Systems: Our plans for space include: making our space systems (the satellites, the ground stations, and the communications links between them) more survivable from attack; improving the surveillance, communications and navigation capabilities of our space systems, and increasing the robustness of our space system network by removing single nodes, procuring backup satellites, and reducing our dependency on overseas ground stations.

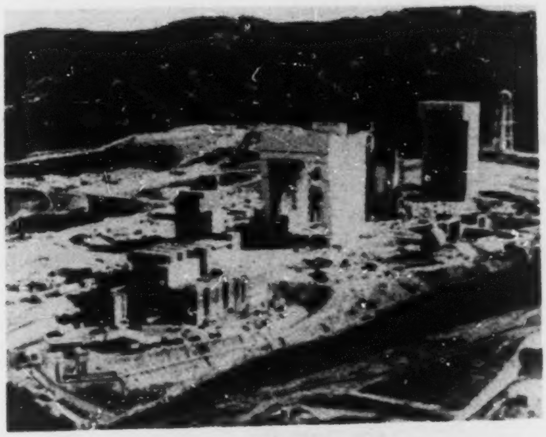
Additionally, we are concentrating our efforts on doing more with each launch by deploying satellites with the capabiltiy to perform multiple missions and with much longer operational life. To optimize our deployment and on-orbit performance, we are evaluating alternate space launch capabilities, improving our space operations capabilities, and aggressively pursuing advanced space related technology.

5. New Space Command: In July 1982, the President issued a new National Space Policy directing a balanced civil and national security space program. As part of the national security space program, the Air Force established the Air Force Space Command, a new major command to centralize and manage our operational space activities. In September 1985, the new unified command, U.S. Space Command, with participation of all four armed services, was activated.

Fiscal Year 1987 Programs

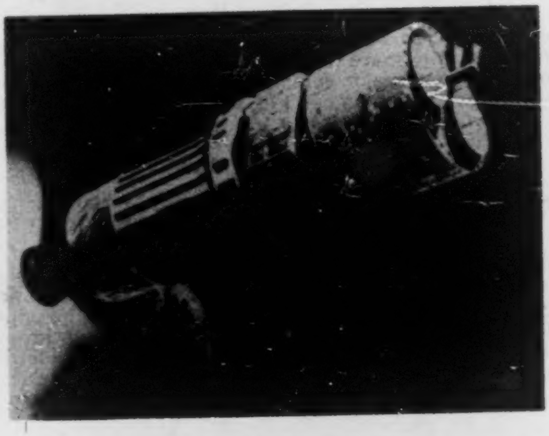
6. Space Shuttle Operations

a. **MISSION**: The Air Force is the Department of Defense executive agent for military applications of the Space Shuttle. In this role, the Air Force is responsible for acquiring and operating the Space Shuttle launch site at Vandenberg Air Force Base. Additionally, this program provides the upper stages needed to place DOD payloads from low earth orbit (LEO) to geosynchronous orbit (GEO). To accomplish this orbital transition we are procuring the Inertial Upper Stage (IUS), Centaur G Upper Stage, and the Payload Assist Module-Delta Class II (PAM-D II).



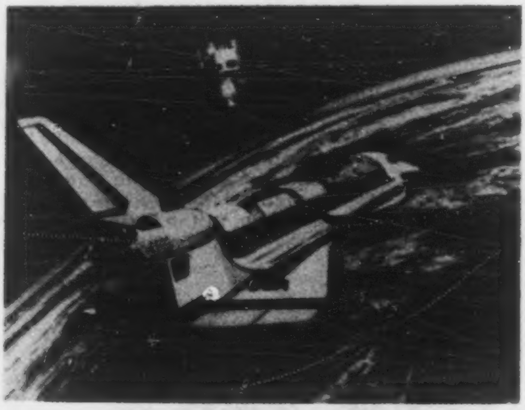
VANDENBERG LAUNCH SITE

b. STATUS: The Vandenberg launch facility was officially activated on October 1, 1985. Pending the findings of the President's Space Shuttle Commission, the Orbiter Discovery is currently scheduled for launch in July 1986. The payloads are the Space Test Program's Teal Ruby experiment - a new infrared mosaic sensor that can detect and track aircraft, and Cryogenic Infrared Radiance Instrumentation For Shuttle - a Shuttle bay experiment to collect data on the aurora and earth atmosphere. The launch of Discovery opens up a new era in our manned spaceflight capabilities in that we will now be able to operate in and deliver payloads to, near-polar, retrograde-azimuth as well as equatorial orbits. This will also be the first shuttle launch to take place from secure Air Force facilities and under control of the Space and Missile Test Organization of Air Force Systems Command's Space Division.

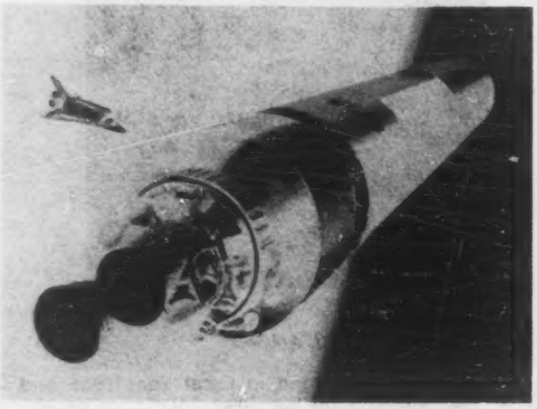


IUS LAUNCHING A DSCS II

In Fiscal Year 1987, procurement funds are required to continue the PAM-D II multiyear procurement in support of the Navstar Global Positioning System (GPS) program. Funds will be used to provide logistics support for the IUS and Vandenberg launch site.



PAM-D II LAUNCHING GPS FROM SPACE SHUTTLE

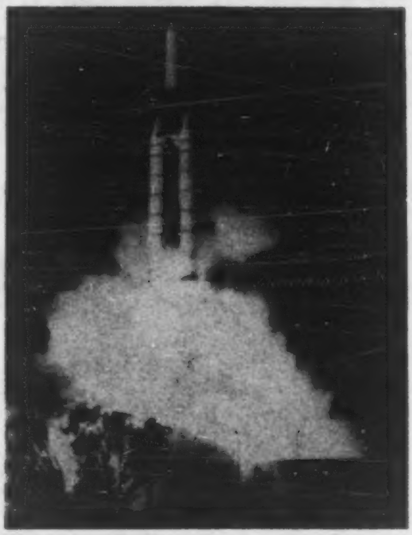


CENTAUR G

Also in Fiscal Year 1987 the Air Force will continue funding for the Centaur G vehicles initiated in Fiscal Year 1985 and acquire two additional Centaurs in support of the Milstar program. These two additional vehicles will be incrementally funded and used to launch Milstar research and development satellites. Finally, our Fiscal Year 1987 request will fund the Manned Spacecraft Engineer program and the orbiter flight charge reimbursements to NASA.

7. Space Boosters

a. MISSION: Under the Space Boosters Expendable Launch Vehicle (ELV) program, we currently launch Titan 34Ds and refurbish and launch Atlas E ELVs. Our last Titan 34D is scheduled for launch in Fiscal Year 1988 and the last Atlas E will launch a Defense Meteorological Satellite in Fiscal Year 1990. This program provides for the procurement, engineering support and flight performance assessment of our expendable launch vehicles. It also provides resources for the Titan 34D Transtage launches at the Eastern Test Range, and for the Atlas E launches of satellites from the Western Test Range.



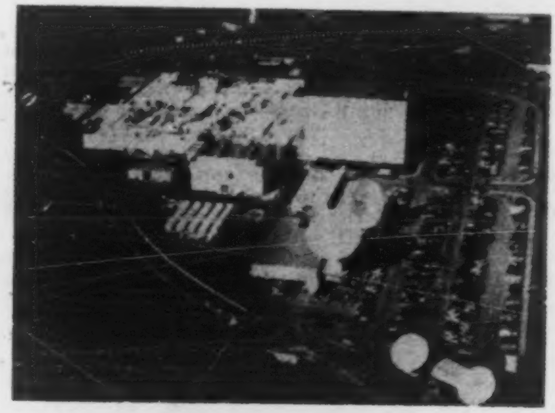
TITAN 34D

b. STATUS: We began in Fiscal Year 1985 and will continue through Fiscal Year 1987 to upgrade the Titan 34D to be capable of launching Shuttle-sized satellites. We initiated production program for ten ELVs in Fiscal Year 1986 with an initial launch capability scheduled for Fiscal Year 1989. Furthermore, in Fiscal Year 1986, we began development efforts to convert the deactivated Titan

II Intercontinental Ballistic Missiles into a space vehicle configuration to launch a limited number of smaller satellites.

8. Satellite Control Facility

a. MISSION: The Air Force provides on-orbit control for Department of Defense satellites from the Satellite Test Center at Sunnyvale Air Force Station, California. It is a global network of instrumentation systems, antennas, communications and data processing equipment required to support the growing inventory of increasingly complex space vehicles.



SATELLITE CONTROL FACILITY
SUNNYVALE CALIFORNIA AIR FORCE SATION

b. STATUS: The current computer system in the Satellite Control Facility (SCF) is costly to maintain and becoming logistically unsupportable. Furthermore, it is incapable of supporting new, more sophisticated satellites now in development. In Fiscal Year 1987, we will continue development and acquisition of the SCF Data System Modernization program, which will correct operational limitations and form the core configuration for operations at both the SCF and the Consolidated Space Operations Center (CSOC). As the CSOC is developed, the data systems modernization computers will be installed there to provide internetting with the SCF. Data System Modernization will reach initial operational capability in Fiscal Year 1986 and Full Operational Capability in the SCF in September 1987. Fiscal Year 1987 funds will also continue development and acquisition of the Advanced Remote Tracking Station to replace and refurbish the existing remote tracking stations to complement the Data System Modernization system.

9. Consolidated Space Operations Center

a. MISSION: The Consolidated Space Operations Center (CSOC) combines two major missions for the Department of Defense: satellite control and

Shuttle military operations. The CSOC Satellite Operations Complex (SOC) will plan and execute operational control of operational DoD satellites. The Shuttle Operations and Planning Complex (SOPC) will provide limited Shuttle flight planning and readiness support and conduct Shuttle mission operations for DoD flights.

The SCF is DOD's single existing satellite control center and as such, constitutes a potential single point failure for satellite control and is vulnerable to both environmental and man-made threats. The addition of the SOC will greatly increase mission capability, flexibility and survivability by providing mutual emergency back-up for mission essential functions.

The SOPC will provide for planning, control, and enhanced security of DoD Shuttle missions. Until the complex becomes operational, DoD missions will be performed totally by NASA's Shuttle control facility at Johnson Space Center (JSC) in Houston, Texas. Once operational, JSC will share the planning, readiness, and control workload for Shuttle flights as well as provide emergency back-up capability for SOPC.

b. STATUS: The CSOC buildup and other site facilities were completed in September 1985 and were turned over from the Army Corps of Engineers to Space Command. The SOC is schedule to achieve its Initial Operational Capability (IOC) in February 1987. At IOC we will be able to control the Navstar Global Positioning System and Defense Support Program satellites. An additional capability to control the Defense Meteorological Satellites will occur in Fiscal Year 1988. The SOPC is currently scheduled for an Initial Operational Capability in Fiscal Year 1989.

10. Space Test Program

a. MISSION: The Space Test Program (STP) advances DoD technology by providing spaceflight missions for experiments that demonstrate new space system technologies, concepts, and designs and for experiments that determine space environmental effects on DoD space systems. This tri-service program provides the only substantial spaceflight capability to perform fly-before-buy demonstrations of advanced technology designs. The STP is the pathfinder for exploiting the Space Shuttle as a manned DoD space laboratory to expedite the infusion of new technology into space systems through the use of simpler, incrementally designed, man-aided experiments. The experience gained from this approach will be a key element in fully defining military man's role in space.

b. STATUS: During 1985 the STP provided space flight for 17 experiments (including five reflights) on various Shuttle missions. The newly launched experiments included 14 Quick Response Shuttle mid/aft-flight deck payloads on four different Space Shuttle flights. These experiments included oceanographic, meteorological, and radiation measurements as well as laser tracking and biotechnology investigations. The remaining three experiments were flown in NASA Get-Away-Special canisters in the Space Shuttle payload bay. These experiments included space ultraviolet measurements and the deployment of the Defense Advanced Research Projects Agency sponsored Global Low Orbiting Relay Satellite.

During Fiscal Year 1986 NASA and STP continued to work on the Combined Release and Radiation Effects Satellite (CRRES) mission. This joint program will develop and launch a Shuttle compatible, free-flying spacecraft to perform a NASA chemical release mission during its three month flight profile in low earth orbit and then boost itself into a high-altitude, elliptic orbit for a DOD mission to evaluate the performance of advanced microelectronic components in a high-radiation space environment. The Air Force will fund the CRRES spacecraft and NASA will fund the Shuttle integration and launch the spacecraft currently scheduled for the fourth quarter of Fiscal Year 1987. Data from both CRRES missions will support development of future DoD and NASA spacecraft.

C. Satellite Systems

1. **Rationale**: U.S. space systems significantly enhance the effectiveness of our ground forces. The global coverage and critical near real-time information that satellites provide are becoming increasingly more important. In fact, many of the tasks performed by our satellites can only be done effectively from space.

2. **Current Systems:** Three Air Force space programs, the Defense Meteorological Satellite Program (DMSP), the Navstar Global Positioning System (GPS), and the Nuclear Detection System (NDS) perform a broad spectrum of missions for the DoD. The DMSP provides weather data, the GPS position and mapping data, and the NDS nuclear detection and location.

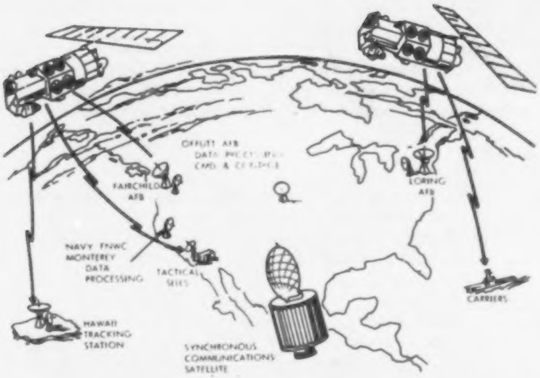
3. **Future Systems**: Upgraded systems are being developed to improve mission performance, duration and survivability. Efforts include mission area planning to broadly examine Air Force capabilities, potential deficiencies and establish development goals in the areas of high frequency communications, advanced tactical battle management and military space station requirements.

Fiscal Year 1987 PROGRAMS

4. The Defense Meteorological Satellite Program

a. **MISSION**: The Defense Meteorological Satellite Program (DMSP) is the DoD's single most important source of weather data. The program is a joint service program with the Air Force serving as executive agent. DMSP provides total earth coverage of meteorological, space environmental, and oceanographic data to Air Force and Navy forecasting centers. In addition, it directly transmits real-time cloud imagery data to Air Force, Navy, and Marine Corps fixed and mobile terminals and Navy aircraft carriers.

b. **STATUS**: The major Fiscal Year 1987 effort will be the continued development of the Block 5D-3 Titan II Space Launch Vehicle qualified spacecraft. Production of the new Mark IV advanced mobile tactical transportable weather terminals for the Air Force and Marine Corps will continue. Integration of command and control hardware into the DMSP Fairchild Satellite Operations Center will begin. Further, the Satellite Control Facility antenna system at the Thule Air Base, Greenland, tracking station is being improved to receive and transmit DMSP command and control and data signals.

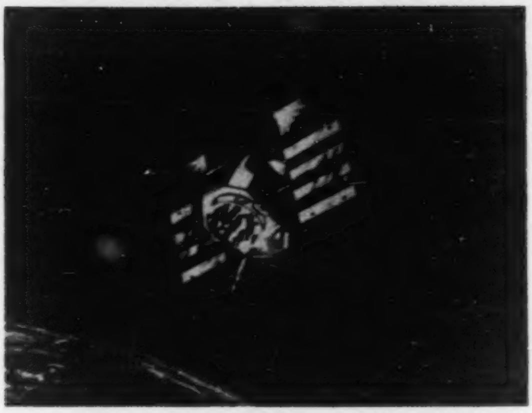

OFFUTT AFB
DATA PROCESSING
CMD & CONTROL
FAIRCHILD AFB
LORING AFB
NAVY FNWC MONTEREY DATA PROCESSING
TACTICAL SITES
CARRIERS
HAWAII TRACKING STATION
SYNCHRONOUS COMMUNICATIONS SATELLITE

DEFENSE METEOROLOGICAL SATELLITE PROGRAM

5. Navstar Global Positioning System

a. MISSION: The Navstar Global Positioning System (GPS) is a space-based radio navigation system which will provide joint service users highly accurate three-dimensional position, velocity, and precise time under all weather conditions on a worldwide basis. When fully operational at the end of 1988, GPS will enable land, air, and sea forces to navigate with extremely high accuracy and be independent of limited-range terrestrial navigation aids. GPS will significantly improve the probability of target acquisition, low-level navigation to and from the target, flexible routing and, most importantly, accuracy of weapons delivery. In addition, a civil version of GPS will also be available for worldwide civil use at reduced accuracy. The GPS system includes a space segment, a control segment, and user equipment. Successful development led to the award of a multiyear production contract for 28 satellites in Fiscal Year 1982. The multiyear contract remains within the cost, schedule, and performance parameters approved by Congress.

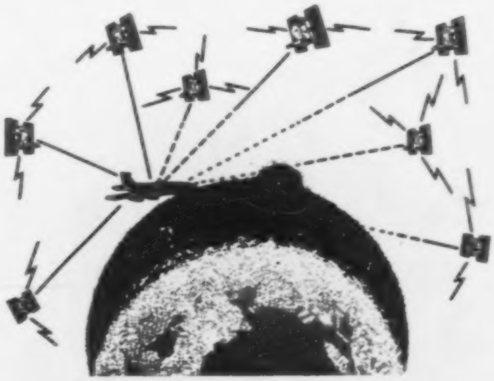
b. STATUS: The last GPS development satellite was launched on October 8, 1985. The Fiscal Year 1987 funds will be used to purchase eight satellites to continue the GPS multiyear contract, to procure and install user avionics on DoD aircraft. Also included is continued funding to support the seven-satellite research and development constellation, which includes mapping, missile testing and avionics integration testing activities. User equipment production, which will provide the services with a family of GPS receivers, will continue. First deliveries are planned for early Fiscal Year 1988.



NAVSTAR GLOBAL POSITIONING SYSTEM

6. Nuclear Detonation Detection System

a. MISSION: The Nuclear Detonation Detection System (NDS), also known as the Integrated Operational NUDET Detection System (IONDS), consists of a set of sensors that will be carried on Navstar GPS satellites. When used with the precision frequency standards of the GPS, these sensors will determine nuclear detonation location, time, and yield.



NUCLEAR DETONATION DETECTION SYSTEM

b. STATUS: Prototype sensors are operational on three GPS developmental satellites. In Fiscal Year 1987 we will continue development and test of the NDS user terminals and acquisition of the operational satellite segment. A full NDS capability will be achieved in Fiscal Year 1989 when the GPS/NDS satellite constellation is on orbit.

F-16 FIGHTING FALCON DROPPING 2000# BOMBS

VIII. Theater Forces

A. Objectives

In order to protect our national interests and meet our extensive commitments, we must have forces capable of countering any conventional threat. Because of the magnitude of our global commitments and the time critical nature of our responses, our forces must have the capability to react and fight anywhere and anytime. To operate in this environment, we are placing high priority on modernization and expansion of our theater forces while continuing to emphasize readiness and sustainabilty.

B. Tactical Fighter Program

BACKGROUND

1. Rationale: At the core of our theater force capability is the tactical fighter force. This force must provide field commanders the flexibility to respond in an appropriate and timely manner to any contingency. This flexibility requires a fighter force large enough to do the job and one which possesses the proper mix of air-to-air and, air-to-ground weapons delivery capabilities. Two years ago, we developed the Tactical Fighter Roadmap to guide us in achieving and maintaining that fighter force. Since then we have updated it in response to changing threats and fiscal constraints.

2. Soviet Threat: The Soviet Union and her allies continue to outproduce U.S. and our allies in nearly all weapons categories. This disparity has resulted in a Warsaw Pact numerical advantage of almost three to one over North Atlantic Treaty Organization forces in mobile armored systems with a similar advantage in tactical aircraft. Soviet technical advances in avionics, aerodynamics, and propulsion systems are narrowing our qualitative advantage. The Soviet's newest fighters (MIG-29 Fulcrum, MIG-31 Foxhound, SU-27 Flanker) are comparable to our frontline F-15 and F-16 aircraft. This quantitative and qualitative expansion presents the most serious threat to our theater forces. We are addressing that challenge by using our advantages in technology and tactics to provide our dedicated and well trained people the most capable equipment we can produce within present fiscal constraints.

3. Tactical Fighter Roadmap: The Air Force has established a force structure goal of 40 tactical fighter wing equivalents. Though this level falls short of that actually required, it represents a practical and fiscally achievable goal within the Fiscal Year 1987 Five Year Defense Plan. Reaching this goal, while maintaining the tactical fighter force at an acceptable average age of approximately ten years, requires that we increase our tactical fighter procurement to at least 260 aircraft per year. Our Fiscal Year 1987 request, consequently, is for 264 aircraft (48 F-15E and 216 F-16 C/D).

In addition to the tactical force, we have a pressing need to replace the aging F-4s and F-106s in our Continental Air Defense Force. In order to accomplish this in the most affordable and cost-effective manner possible, we are conducting a competition for approximately 300 air defense aircraft. The competition will be conducted in Fiscal Year 1986 and will be open to all existing aircraft.

Aircraft competition is but one of the innovative approaches we are applying to build and maintain the forces required to protect our national interests. In addition, we are studying new modification programs for current inventory aircraft which may provide increased capability and supportability and thereby increase useful service life. We are also establishing cost goals earlier than ever before in the development of future systems and applying goals to operating and support costs as well as procurement. We have and will continue to explore every available avenue to build and maintain our forces at the required levels. The Tactical Fighter Roadmap will continue to be revised and updated so that we can achieve our objectives in the most cost effective manner possible.

Fiscal Year 1987 PROGRAMS

4. F-15 Eagle

a. MISSION: The F-15E provides the dual capability of performing all-weather navigation, deep penetration, and night/under the weather air-to-surface attack, while retaining the basic air-to-air capabilities of the F-15A-D. We are adding the systems, such as Low Altitude Navigation and Targeting Infrared for Night (LANTIRN) and a missionized rear cockpit, that the F-15E needs to perform its ground attack mission. The F-15E will complement the limited F-111 fleet. At comparable loads, the F-15E has less range than the F-111 but is capable of delivering a wider variety of air-to-surface munitions. In the air-to-air arena, the F-111 can defend itself while the F-15E can conduct offensive counter-air operations. The F-15A/B air superiority version was introduced into the Reserve forces with the activation of the first unit at New Orleans Air National Guard Base in October 1985.

F-15 EAGLE

b. STATUS: We accepted delivery of the first Multistage Improvement Program (MSIP) F-15 production aircraft in June 1985. The MSIP program is designed to provide improvements to meet evolving threats. Improvements include software changes to the radar system, adding Advanced Medium Range Air-to-Air Missile (AMRAAM) capability, incorporating improved communications and identification equipment as well as updating the electronic warfare system. The MSIP F-15 configuration serves as the baseline for the F-15E.

With Fiscal Year 1987 Research, Development, Test and Evaluation (RDT&E) funds, we will continue testing of the integrated MSIP systems, MSIP Radar Electronic Counter Counter Measures updates, continue development of the Tactical Electronic Warfare Systems support equipment, and integration of an increased performance engine. F-15E unique tasks in Fiscal Year 1987 include hardware/software development, in-depth ground testing, and initial flight testing.

In Fiscal Year 1986, we will procure the last of the F-15 C/Ds and the first eight of a total of 392 F-15E aircraft. Our Fiscal Year 1987 request will purchase 48 F-15E aircraft. The first F-15E delivery is scheduled for December 1986.

5. F-16 Fighting Falcon

a. MISSION: The high performance multi-mission F-16 performs a broad spectrum of tactical air warfare tasks coupling exceptional air-to-air performance and potent air-to-surface delivery capability. The F-16, rapidly becoming the backbone of our fighter fleet, is replacing aging F-4s in the active and reserve forces. The F-16 is operated by 28 active and two reserve/guard units in air-to-air and air-to-surface roles. Five Air Reserve Force units will convert to the F-16 in Fiscal Years 1986 and 1987. The F-16 serves in the air forces of nine nations worldwide.

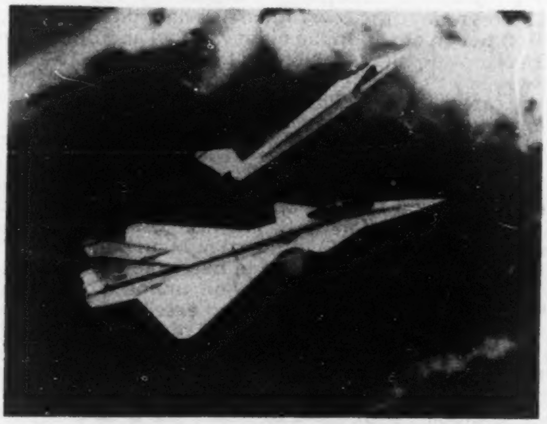
F-16 FIGHTING FALCON

b. STATUS: The F-16 continues to evolve in capability. We continue to improve airframe, engine, and aircraft subsystems so that the F-16 can counter the increased Soviet quantitative and qualitative threat. Fiscal Year 1986 development activities include production incorporation of AMRAAM capability and robust electronic warfare countermeasures provisions. We are also developing a digital flight control system to provide, in conjunction with LANTIRN, a night, under-the-weather mission capability. Our Fiscal Year 1987 program will continue development efforts on radar Electronic Counter-Countermeasures. We are developing a retrofit kit for early model F-16 A/Bs to allow employment of new weapons such as AMRAAM and to baseline a common configuration with our European partners.

Our Fiscal Year 1987 request funds 216 F-16 C/D aircraft during the second year of the F-16 follow-on multiyear contract. The original multiyear contract saved $257 million. We expect to realize greater savings as a result of the second multiyear contract.

6. Advanced Tactical Fighter

a. MISSION: To meet the threats of the 1990's, we are developing the air superiority fighter of the future, the Advanced Tactical Fighter (ATF). This aircraft will counter the next generation of Soviet fighters that will have maneuvering capability and fire control systems vastly superior to most advanced F-15 and F-16s. The possibility of operations in areas such as Southwest Asia demand an aircraft with greater combat radius, more rapid deployment capability, a low observable signature, and reduced logistics support than our present fighters. Through the application of signature control, supersonic cruise and maneuver, and advanced avionics, the ATF will provide a dramatic increase in lethality, survivability and offense capability to ensure air superiority after the mid-1990s.



ONE POSSIBLE TYPE OF ADVANCED TACTICAL FIGHTER
Artist's Concept

b. STATUS: We are proceeding toward the selection of three or four contractor teams who will demonstrate/validate the respective ATF concepts through detailed design analysis, mission effectiveness testing, and wind tunnel testing. The Request for Proposal was released on October 8, 1985. The RFP sets a design-to-cost goal of $35 million (Fiscal Year 1985 $) for the unit flyaway cost. We will also establish design-to-cost goals for unit production cost, annual operation and support costs, and twenty year Life Cycle Costs. We expect the demonstration/validation contractors to plan high levels of competition at subsystem and component piece part levels. We anticipate Milestone I approval in mid-Fiscal Year 1986. The Demonstration/Validation Phase, continuing through Fiscal Year 1989, will place heavy emphasis on hardware risk-reduction efforts in key ATF technologies. We expect to select an ATF design and begin full scale development in Fiscal Year 1989. We are driving toward a 1995 Initial Operational Capability.

The engine for this aircraft will have significant capability improvements over current engines. During Fiscal Year 1985, we completed the engine design and fabricated critical engine components. In Fiscal Year 1986, we will complete fabrication of demonstration engines and begin durability and performance demonstrations. In Fiscal Year 1987 we will continue durability and performance demonstrations and conduct accelerated mission testing. We plan to have over 800 hours of engine testing prior to transitioning to full scale development in Fiscal Year 1989.

7. Low Altitude Navigation and Targeting Infrared for Night

a. MISSION: Soviet and Warsaw Pact armored forces are becoming stronger. These forces equipped with night vision capability and accurate laser ranging systems assure a continued enemy thrust during night and adverse weather. To counter this threat, we must be able to fight in these conditions. We consider lack of night attack capability to be the most serious operational deficiency in our tactical air forces today. The Low Altitude Navigation and Targeting Infrared for Night (LANTIRN) system opens up the night window and denies the enemy this sanctuary. LANTIRN provides the capability for the F-15E and F-16 C/D to ingress the target area below enemy air defenses at night and in conditions of limited visibility. It also provides the capability to acquire and accurately attack tactical targets with the Imaging Infrared (IR) Maverick, laser-guided bombs, and other conventional ordnance.

b. STATUS: Since we capped its cost in early 1983, the LANTIRN program has been stable and remains on track from a cost standpoint. Eighty percent of the development effort is behind us. We have completed Initial Operational Test & Evaluation (IOT&E) of the navigation pod and the results were excellent. We flew more than 570 sorties and over 100,000 miles under 500 feet with over 50,000 miles at night. Our follow-on testing of the navigation pod Reliability and Maintainability fixes has produced excellent results. Pod reliability now stands at approximately 29 hours, well ahead of the projected 18 hours. The navigation pod is in production with Lot II placed on contract in early 1986. The targeting pod, as we stated last year, did not mature as fast as the navigation pod. During the past year, we have conducted additional testing, and recent test results have been very encouraging. We have corrected the problems noted in earlier testing. Our pilots have noted overall improvement in the Forward Looking Infrared (FLIR) picture and tracker stability. These pilots have been able to "lock on" to vehicle sized targets at six nautical miles (nm) (3-4 nm was expected). The system has also made numerous IIR Maverick missile handoffs. As of January 10, 1986, we have flown the pod on 349 sorties over 60,000 miles, with 20,000 miles at night. We began IOT&E in January 1986. We will make the targeting pod production decision this Spring.

F-16 WITH LANTIRN PODS

Both the development and production programs are under firm fixed-price contracts. We have exceptional warranty provisions and stringent reliability requirements. The contractor will repair all failures for up to 24 months or 400 operating hours on all pods at no cost to the government. The production contract is for 700 pod sets and 29 sets of Intermediate level support equipment.

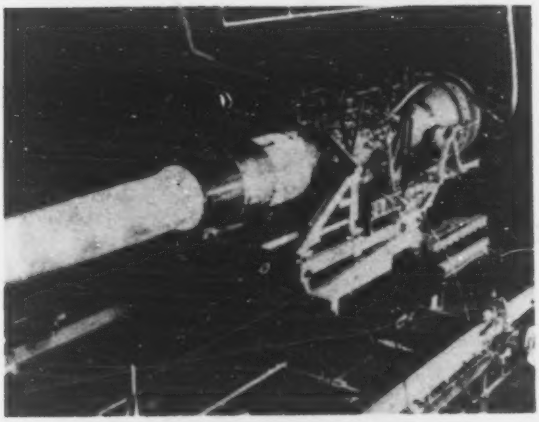
The first navigation pod production delivery is scheduled for April 1987. The first target pod will be delivered in April 1988. Initial Operational Capabilities are 1989 and 1990 respectively.

Our Fiscal Year 1987 research and development request supports F-15E/ LANTIRN and F-16/Auto Terrain Avoidance flight testing and continues support equipment development. Our procurement request will buy 143 navigation pods, seven targeting pods, six sets of support equipment, and spares.

8. Engine Model Derivative Program

a. MISSION: The Engine Model Derivative Program (EMDP) provides air vehicle systems with the latest advances in engine technology and provides a framework for engine development for future systems. It demonstrates derivative engine concepts incorporating new low-moderate risk technology in the areas of performance, durability, operability, supportability, reliability, maintainability, and other engine capabilities, i.e., thrust reversing/thrust vectoring, in prototype engines prior to full scale development. EMDP provides competitive alternate engine candidates for military aircraft.

b. STATUS: Under the EMDP umbrella, we currently have two engine demonstration programs. We are finishing the F100 EMDP test program. The F100 EMDP engine is a 27,000 pound thrust class growth version of the current Pratt and Whitney F100-220 Alternate Fighter Engine (AFE) engine. The higher flow fan and full life low pressure turbine developed for this EMDP engine will be used in the Pratt and Whitney F100 Increased Performance Engine (IPE) design.



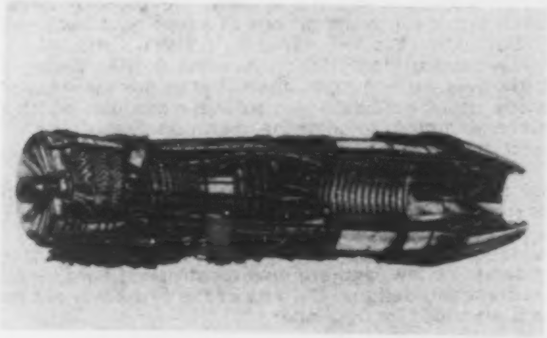
ENGINE TEST FOR THE ENGINE MODEL DERIVATIVE PROGRAM

This past summer we began our second demonstration program, the F100/F110 Increased Performance Engine program. This program will yield valuable data which will be used during full scale development. Pratt and Whitney and General Electric have completed the preliminary design reviews for their respective 29,000 pound thrust class derivatives of the F100 and F110 AFE engines. We will begin demonstration engine testing in Fiscal Year 1986. Each demonstration engine will accumulate approximately 4,000 cycles of operation. We will make a Full Scale Development decision for these engines in May 1986. Fiscal Year 1987 will be a transition year, where we will transfer our efforts from these demonstration programs to full scale development under the Alternate Fighter Engine program.

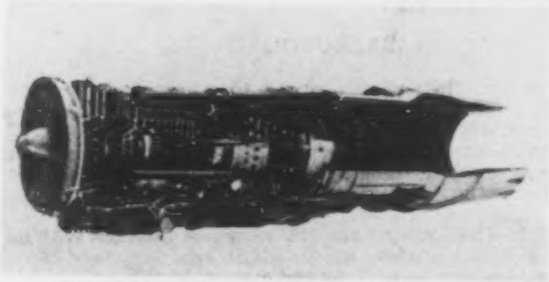
9. Alternate Fighter Engine

a. **MISSION**: The Alternate Fighter Engine (AFE) program supports the Tactical Fighter Roadmap by providing durable, supportable, and affordable fighter engines for the expanding F-15 and F-16 fighter forces. Program activity also includes configuring engine bays in both aircraft to be capable of receiving either the Pratt & Whitney F100 or the General Electric F110 engines. This program also funds full scale development for the increased performance version of F100 and F110 scheduled for 1990 delivery.

b. **STATUS**: In Fiscal Year 1986, we will complete the Alternate Fighter Engine development. We began quantity production of both the F100 and F110 engines in January. The first delivery of an F-16 C/D with the General Electric F110 engine is scheduled for July 1986. We also will fabricate development hardware for the F-15 Configured Engine Bay. In May 1986, we expect a full scale development decision for the F100/F110 Increased Performance Engine (IPE) program. This decision will be based on favorable critical design reviews for both engines. In Fiscal Year 1987, we will assemble FSD and flight test engines. We will also begin sea level engine testing and flight testing of pre-production prototype engines. In the coming years, we will put each engine through over 1000 hours of ground testing and a 4000 Total Accumulated Cycles accelerated mission test. If all goes according to plan we would expect to deliver the first production IPE engine in January 1990.



GENERAL ELECTRIC F110 AFE



PRATT & WHITNEY F100 AFE

10. INEWS/ICNIA INTEGRATED AVIONICS

a. MISSION: Since World War II new electronic systems have been added piecemeal to our combat aircraft -- as individual stand alone avionics systems. With the increasing reliance upon more sophisticated and complex avionics systems to assist the pilot in accomplishing his mission, the costs of developing and integrating individual systems into aircraft one at a time have become prohibitive. The Integrated Electronic Warfare System (INEWS) and the Integrated Communications, Navigation, Identification Avionics (ICNIA) system are making major changes to the way we add new capabilities to our avionics suites. These systems will be made up of hardware and software modules which can be put together in various combinations to tailor the operational capability to the mission of the particular aircraft type.

b. STATUS: The INEWS is now finished concept definition and source selection is currently underway to pare down the five different contractor team's concepts to the two best concepts. These two will enter the demonstration/validation phase in May 1986. The ICNIA contractors have completed critical design review, and are now constructing hardware and coding software for their competing designs. Delivery of the first advanced development model ICNIA radio is scheduled for December 1987.

INEWS continues as a joint Air Force/Navy program targeted for the Advanced Tactical Fighter (ATF) and Advanced Tactical Aircraft (ATA). The Navy has joined the Air Force and Army in the ICNIA program, adding the ATA, F-14D, and F/A-18 to the ATF, F-16, F-15, and LHX as potential users of the system.

C. Munitions Acquisition

BACKGROUND

1. Rationale: The Soviets continue to maintain a large well-equipped ground force. This offensively oriented force capable of large scale, theater wide combined arms operations posses a serious threat to the NATO alliance. The Soviets are posturing themselves to be able to achieve their goal of attaining a quick victory in theater warfare through the rapid advance to deep theater objectives. We must be able to counter any attack with conventional forces.

2. Threat: The Soviets have 213 maneuver divisions with an extensive support structure, including artillery, missile, air defense, engineer, reconnaissance, signal, chemical, and logistics units. Tank and motorized rifle and airborne divisions constitute their basic maneuver forces. This force is continuing to grow and be modernized continually. The Soviets are also expanding and upgrading their support structure. Their goal is the concentration of overwhelming firepower to achieve advantageous force ratios.

3. Munitions Acquisition Plan: Sophisticated Soviet and Warsaw Pact defenses make overflight of high value targets increasingly hazardous. Warsaw Pact numerical superiority in armored vehicles dictate multiple-kills-per-pass weapons. Soviet numerical air superiority drives us toward launch and maneuver air-to-air weapons. Obviously there are situations that do not require such sophisticated weaponry, nor are we able to buy all the precision guided munitions we require. A plan was developed, therefore, to help us determine the optimum mix of conventional air delivered munitions. Just as the Tactical Fighter Roadmap

guides our force structure development, the Munitions Acquisition Plan (MAP) guides our air-delivered munitions development and procurement. The MAP addresses our near term shortfalls and represents the Air Force position on what weapons should be procured. The MAP presents a listing of our research, procurement, and advanced development efforts in priority sequence. This listing is useful particularly in situations involving severe financial constraints. The President's budget reflects the conclusions of the MAP.

Fiscal Year 1987 PROGRAMS

4. Advanced Medium Range Air-to-Air Missile

a. MISSION: The Advanced Medium Range Air-to-Air Missile (AMRAAM) is a high performance launch and maneuver air-to-air missile which will help the U.S. and NATO tactical air forces compensate for the numerical advantage enjoyed by the Warsaw Pact. The AMRAAM is an all-aspect, all-weather, all-environment air-to-air missile for air superiority and air defense aircraft. This follow-on to the AIM-7 Sparrow has significantly improved operational utility and combat effectiveness. The missile provides the attacking aircraft with the capability for multiple target attack during a single intercept. We will deploy the AMRAAM on the USAF F-15 and F-16, and the Navy F-14 and F/A-18. The AMRAAM is one of a family of missiles covered under the Four Power Memorandum of Understanding (MOU) with the US, United Kingdom, the Federal Republic of Germany and France (observer status). Under the agreement, we will develop AMRAAM for use by all participants. AMRAAM will satisfy the NATO operational objective for air-to-air missiles for the 1980's and beyond and will be compatible with the German F-4F and the United Kingdom's air defense version Tornado and Sea Harrier. The United Kingdom, West Germany, and Norway are developing the Advanced Short-Range Air-to-Air Missile (ASRAAM) which is a follow-on to the AIM-9 Sidewinder. Under the provisions of the MOU, we have agreed to mutual data sharing and technology transfer, along with the right to purchase, co-assemble, or dual-produce one another's missile system.

b. STATUS: On December 7, 1984, we began the Development Test and Evaluation (DT&E)/Initial Operational Test & Evaluation (IOT&E) program with the first full scale development AMRAAM (unguided) to verify that the missile meets specification requirements and to make an early operational assessment. We also began the guided test launch program and the Test, Analyze and Fix Program. We have had four successful launches in four attempts since we began the test launch phase. The Defense Systems Acquisition Review Council approved the continuation of the restructured program. Our emphasis in Fiscal Year 1986 is to reduce production costs through producibility enhancements, management initiatives, and by accelerating the follower contractor (Raytheon) to attain earlier competition. The Raytheon production qualification program begins and the producibility enhancement program continues in Fiscal Year 1986. In Fiscal Year 1987, we plan to begin a low rate initial production run of 260 missiles with both contractors. We plan a full competition for production by Lot III (95% of the total projected procurement will be under competition). This competitive procurement coupled with the producibility enhancements will allow for production of the 17,000 missiles within the $5.3 billion (Fiscal Year 1984 $) cost cap established by Congress. In Fiscal Year 1988 we also will complete the F-15 and F-16 DT&E/IOT&E program as well as the F-16 Captive Carry Reliability Program.

F-16 WITH AMRAAM

5. Advanced Short-Range Air-to-Air Missile

a. MISSION: The Advanced Short Range Air-to-Air Missile (ASRAAM) is planned to be the next generation short range air-to-air missile. ASRAAM equipped aircraft will be able to outshoot threat aircraft equipped with AIM-9L/M Sidewinder-equivalent weapons. The ASRAAM is optimized for close-in combat where all-aspect, high velocity, high maneuverability, off-boresight capability, and seeker acquisition and tracking are critical performance requirements. As mentioned above, the European governments are developing ASRAAM. This cooperative effort will avoid duplicating development costs, provide options for coproduction and increase NATO standardization and interoperability.

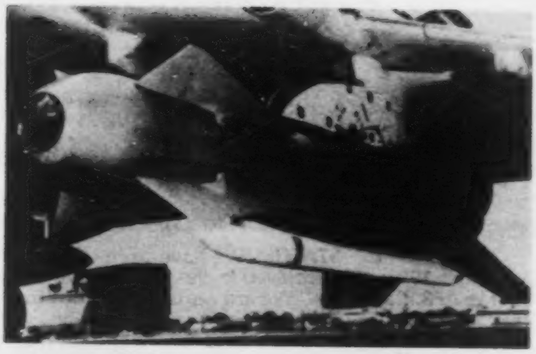
b. STATUS: The ASRAAM program is a new start. We will use the requested funds to provide a continuous liaison during the development effort. Our program office will be at Eglin AFB in Florida. We will have representatives in the joint European program office in Koblenz, Germany. Our representatives will review ASRAAM technical and performance data and assess the impact on our aircrafts' performance as the ASRAAM design evolves. We will make a procurement decision after a complete review of missile cost, schedule, performance, reliability, and maintainability. Assuming a favorable decision, we could expect production missiles in the mid-1990s.

6. Surface Defense Suppression

a. MISSION: In this program, we are developing a family of modular guided weapons designed to destroy high value point targets and enemy defense sites. The GBU-15 is a glide bomb equipped with a television (TV) or Imaging Infrared (IIR) seeker. The AGM-130, a rocket powered GBU-15, is a highly accurate, medium-standoff weapon. Both weapons provide low altitude launch capability with high terminal accuracy through man-in-the-loop weapon control from launch to impact. The AGM-130 responds to the improving enemy air defense systems by allowing the attacking aircraft to move further from the target. These weapons employ the same seekers and data link. For hard target attack capability, we plan to integrate the Improved-2000 pound warhead into the AGM-130. The

GBU-15 family will be deployed with F-4E and F-111F aircraft. The AGM-130 will be carried by the F-15E in addition to the F-4E and F-111F.

GBU-15 ON F-111

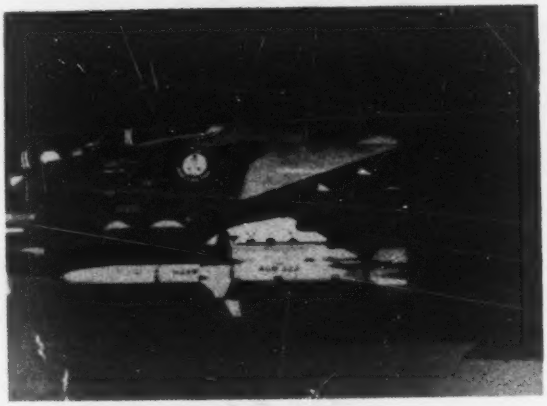


AGM-130
Artist's Concept

b. STATUS: The GBU-15/TV version is in production. We are conducting Follow On Test and Evaluation on the IIR version. The IIR version will provide us with a night attack capability. The IIR seeker we are using is 90% common with the Maverick IIR seeker. We began AGM-130 development in September 1984. DT&E/IOT&E began in the fourth quarter of Fiscal Year 1985. We are able to reduce the development time because the AGM-130, a Preplanned Product Improvement, makes maximum use of GBU-15 in production hardware. The only major additions are the rocket motor and the radar altimeter. Based on favorable test results during Fiscal Year 1986, we will begin procuring tooling, test equipment, and production-proof AGM-130As. We will also begin full scale development of an improved data link. The data link is key to successful employment and high terminal accuracy for both the GBU-15 and the AGM-130A. In Fiscal Year 1987, we will continue GBU-15/IIR production and make a production decision on the AGM-130A. We will also continue developing the improved data link. Due to fiscal constraints, we have cancelled further efforts on the AGM-130B dispenser variant.

7. High Speed Anti-Radiation Missile

a. **MISSION**: The High Speed Anti-Radiation Missile (HARM) provides a destructive counter to sophisticated enemy ground based, radar guided missiles, and antiaircraft artillery systems which threaten our tactical aircraft survivability. The F-4G Wild Weasel equipped with the HARM represents our only dedicated lethal defense suppression weapon system. The HARM is a joint service effort with the Navy as the executive service.

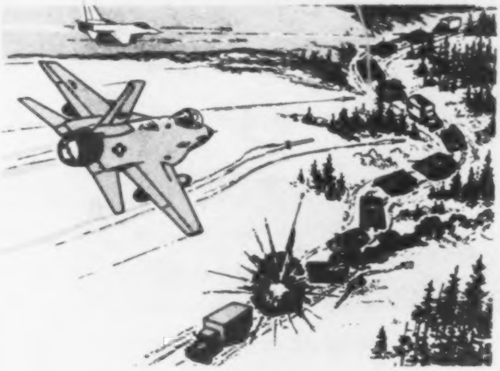


F-4G CARRYING HARM

b. **STATUS**: We have been taking delivery of HARM missiles since December 1983. We achieved Initial Operational Capability in September 1984, at George AFB, California. We are requesting funds to procure 2130 missiles in Fiscal Year 1987. Our research and development request will be used to keep the HARM abreast of the threat. We plan software updates to improve performance against new radars. We are also planning hardware upgrades to reduce future hardware costs and improve HARM availability to the user. We anticipate concluding the product update program in Fiscal Year 1988. In addition, the joint Navy/Air Force Lower Cost Seeker program is proceeding in accordance with Congressional directives.

8. Hypervelocity Missile

a. **MISSION**: The Hypervelocity Missile (HVM) is a small, fast, low-cost, laser-guided munition which can achieve multiple-vehicle kills on a single pass. The HVM concept promises to give the U.S. an impressive increase in firepower for the anti-vehicular mission at an equally impressive decrease in cost per target destroyed. The HVM is a 5000 feet per second, 66 pound, low cost ($8.5 thousand) class missile for use against all vehicles, including armor. This advanced technology development program is a tri-service effort which maximizes component commonality.



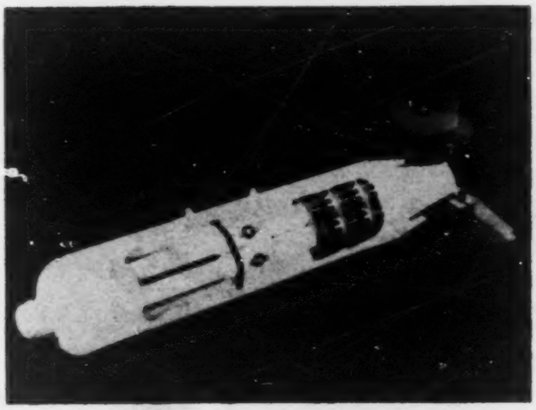
F-16s ATTACKING TANKS WITH HYPERVELOCITY MISSILES
Artist's Concept

b. STATUS: In Fiscal Year 1985, we amended the Air Force contract to include Army and Marine Corps requirements. We began missile component design. In Fiscal Year 1986, we will continue contractor design of missiles, launchers, and test equipment. We will also begin integration of the current fire control system. We will also conduct a weaponization study addressing aircraft integration and potential alternate fire control systems. We will complete missile fabrication in Fiscal Year 1987 and conduct ground and air launched testing. We expect to proceed into full scale development in Fiscal Year 1989.

9. Armament Ordnance Development

a. MISSION: In this program, we conduct our primary activities for modernizing and developing unguided air-to-surface conventional munitions, and associated carriage, release and handling equipment. Our efforts provide new capabilities to fill operational voids and modernize existing capabilities to eliminate deficiencies. Presently our major focus is the development of the Direct Airfield Attack Combined Munition (DAACM). DAACM is a Tactical Munitions Dispenser (TMD) containing eight Boosted Kinetic Energy Penetrators (BKEP) and 24 British HB-876 mines. DAACM will significantly improve our airfield attack capability and will be the successor to the currently procured French Durandal. The BKEPs provide multiple craters per weapon and the mines impede runway and taxiway repair operations as well as threaten aircraft.

b. STATUS: DAACM development (integration of BKEP and mines into the TMD) begins in 1986 with a source selection and contract award. In Fiscal Year 1987, we will conduct a critical design review, begin flight tests, and conduct a production readiness review. We will complete DT&E and IOT&E and make a Low Rate Initial Production decision in Fiscal Year 1989.



DIRECT AIRFIELD ATTACK COMBINED MUNITION

We are also developing the Transportable Missile Storage Rack, the Reusable Protective Device, the Improved 2000 pound (I-2000) warhead, and several warhead fuzes. The Transportable Missile Storage Rack and the Reusable Protective Device will be in source selection during Fiscal Year 1987. The Transportable Missile Storage Rack will allow high density storage and intra-theater air transportation of missiles. The Reusable Protective Device will allow us to place preassembled munitions in long-term storage protected from the elements. In Fiscal Year 1986, we will make a production decision on the I-2000 warhead.

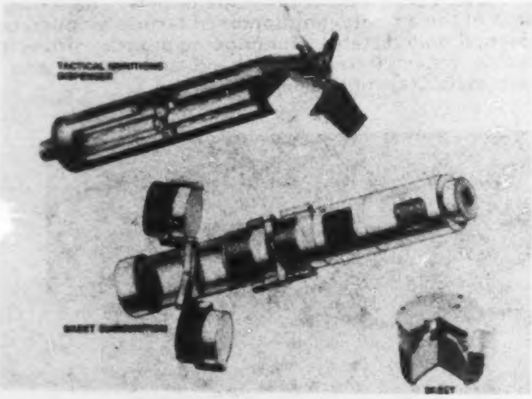
10. Hardened Target Munition

a. MISSION: The Hardened Target Munitions program will develop two new weapons for use against the expanding array of hard targets. The I-1000 will be a 1000-pound penetrating warhead with operational carriage and delivery flexibility beyond that of the I-2000 warhead. It is being developed for use with developmental standoff weapons. The boosted penetrator will provide capability beyond that available with the I-1000 and I-2000. This program will also continue to improve the I-2000. Improved fuzes and better targets to test penetrating weapons will be developed to support the development of these new weapons.

b. STATUS: This is a Fiscal Year 1987 new start. We consider the I-1000 a low risk development effort since it utilizes existing penetration technology demonstrated in the I-2000 program. We will award a development contract early in the year. We will begin wind tunnel and sled testing by the fourth quarter. In Fiscal Year 1988, we will begin DT&E/IOT&E and environmental/safety qualification testing. We expect to complete DT&E/IOT&E in November 1989 and make a production decision and contract award shortly after. The boosted penetrator will be a higher risk program. We are planning to conduct a free flight demonstration of the technology at the beginning of the full scale development program in Fiscal Year 1989.

11. Sensor Fuzed Weapon

a. MISSION: The Sensor Fuzed Weapon (SFW) will provide the capability to destroy multiple enemy tanks during a single pass. The SFW can be employed during night and adverse weather conditions permitting us to overcome the large numerical armor advantage of the Warsaw Pact. The 1000-pound Sensor Fuzed Weapon is a Tactical Munitions Dispenser (TMD) packaged with ten Skeet Delivery Vehicles each with four armor defeating warhead mechanisms. This mechanism is commonly called a Skeet. It consists of a self-forging warhead and an infrared detector. After being deployed from the delivery vehicle, the infrared detector locates hot areas on armored targets. When the hot spot is located, the mechanism fires the warhead. The SFW can be delivered from low altitudes.



SENSOR FUZED WEAPON

b. STATUS: In late Fiscal Year 1985, we successfully completed a risk reduction program for the Sensor Fuzed Weapon. The risk reduction effort addressed a fratricide problem that appeared during early testing. This fratricide effect was seen when the blast from the first warhead caused a second warhead to detonate. We believe we have solved this problem. The reduction program ended successfully with a full function test of a Skeet Delivery Vehicle. The delivery vehicle successfully ejected a full load of four Skeets. Each Skeet detected a separate tank target and fired its warhead which struck the target. We began full scale development in November 1985. A Critical Design Review is scheduled for July 1987. We will begin DT&E/IOT&E in Fiscal Year 1987 and will make a production decision in October 1988.

D. Battlefield Management

BACKGROUND

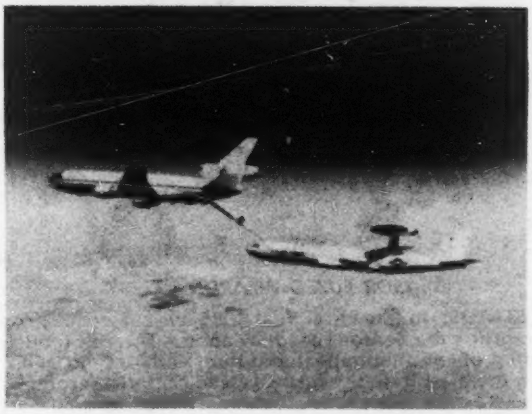
1. Rationale: It is not enough to provide a field commander aircraft and munitions. We must give him the capability to manage his forces in the prosecution of the battle. He needs eyes and ears to penetrate the "fog of war" to locate and target, ideally in real-time, enemy defenses, troop concentrations, and armored columns. He needs secure communications systems to pass time-critical data to command and control centers and friendly forces. He needs reliable, long-range methods for his ground and air forces to identify friend from foe. These capabilities are critical if he is to be able to adjust the order of battle, establish target priorities, and make effective use of our limited defense suppression and tactical jamming

assets. The Fiscal Year 1987 President's Budget provides a balanced program which responds to the threat and the field commanders needs consistent with our budgetary constraints.

Fiscal Year 1987 Programs

2. E-3 Airborne Warning and Control System

a. MISSION: The E-3 Airborne Warning and Control System (AWACS) overcomes ground based surveillance system deficiencies such as range, vulnerability, and effectiveness against low altitude targets. The AWACS provides real time management of the air battle in support of tactical air operations and in defense of the continental United States. Our ongoing program strives to maintain the AWACS as a viable system through command and control and electronic counter-countermeasures (ECCM) improvements.

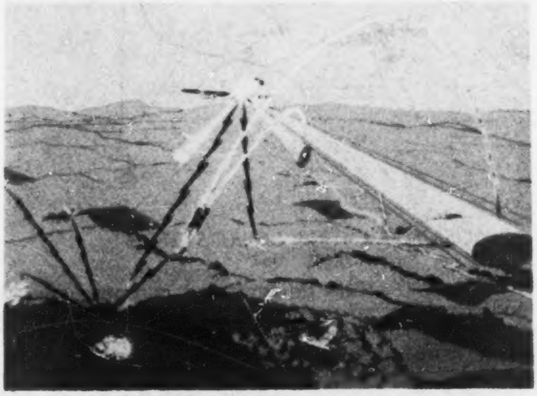


KC-10 REFUELING E-3 AIRCRAFT

b. STATUS: In Fiscal Year 1985 we completed flight-test activities to place additional radios and multipurpose consoles on the aircraft. The communications electronic countermeasures (HAVE QUICK A-Net) improvement project will continue through Fiscal Year 1986 and complete development in early Fiscal Year 1988. During 1986 we will begin, with NATO, a cooperative development of an electronic support measures (ESM) addition to the U.S. and NATO E-3 Surveillance Systems. This addition will provide a passive detection, location, and identification capability against airborne, shipborne, and ground-based emitters. Development of this capability continues through 1989. Another major developmental activity underway is the development of the Joint Tactical Information Distribution System (JTIDS) Tactical Data Information Link "J" (TADIL J). TADIL J will provide secure jam-resistant communications with JTIDS equipped fighter aircraft. This development continues through Fiscal Year 1989. In Fiscal Year 1987 we will begin full scale development of the Improved Radar Data Correlator and improved Radar Control and Maintenance Console. These improvements will provide increased computer storage capacity and processor speed required by E-3 radar and ECCM updates and provide improved and expanded maintenance capabilities. They will also provide significant improvement in the reliability and maintainability of the present radar data correlator, and correct known deficiencies in the present radar control and maintenance console. We intend to install these modifications as well as the Global Positioning System and the Single Channel Ground and Airborne Radio System as a block update. The AWACS has served us well on worldwide deployments and we intend to maintain its capability to operate efficiently in future threat environments.

3. Joint Surveillance Target Attack Radar System

a. MISSION: The Joint Surveillance Target Attack Radar System (Joint STARS) provides an electronic "high ground" over the battlefield in order to delay, disrupt, and destroy first and second echelon Warsaw Pact armored forces and hamper their attempts to break through allied positions. The Air Force/Army Joint STARS will, in real time, detect, track, and pass exact enemy locations and position updates to friendly attack forces. Joint STARS will also provide Corps commanders with wide area surveillance information for timely maneuver of forces and battlefield management. Joint STARS is a critical element of the NATO follow-on force attack initiative. Joint STARS will be deployed on two platforms; an interim C-18 aircraft to meet the 1990s operational requirement and a follow-on more survivable platform later.



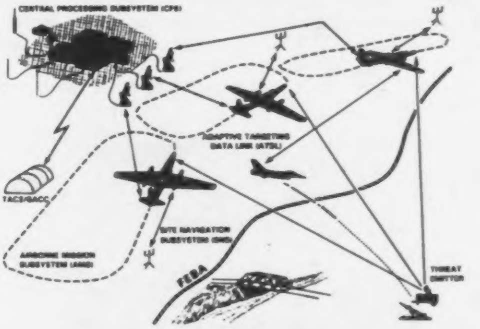
JOINT SURVEILLANCE TARGET ATTACK RADAR SYSTEM

Artist's Concept

b. STATUS: The Joint STARS full scale development contract was awarded to the Grumman/Norden/Boeing team on September 27, 1985. We are proceeding with the system and preliminary design phases and the refurbishment/modification of the C-18 test aircraft beginning with corrosion control and service bulletin compliance. During Fiscal Year 1987 we plan to complete development of the Ground Station Module and make a production decision. We will complete development test, and integration of circuit design hardware and will begin air worthiness flight tests. In Fiscal Year 1987, we expect to reach a Milestone IIB decision including a force structure resolution. We plan to begin a European Field Test Demonstration in October 1989 with a production decision in September of 1990.

4. **Precision Location Strike System**

a. **MISSION**: The Precision Location Strike System (PLSS) system can locate, within targeting accuracy, enemy air defense emitters in near real-time and provide this information to attacking forces who could employ PLSS targeted F-16s carrying conventional munitions. It will enhance the effectiveness of F-4G Wild Weasel/HARM aircraft, and EF-111 jamming aircraft by cueing them to their targets. PLSS is the only system possessing the detection capability, processing speed and target accuracy necessary to significantly reduce the attrition of friendly forces in European Theater. The TR-1 aircraft is the airborne relay vehicle for PLSS.

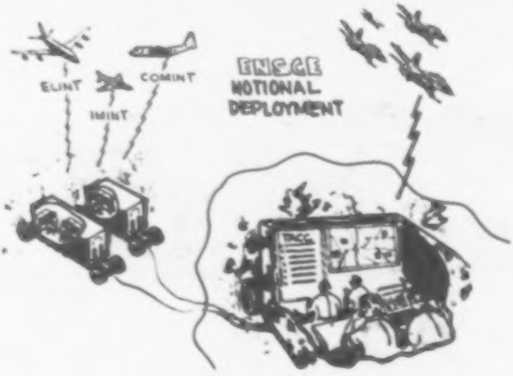

CENTRAL PROCESSING SUBSYSTEM (CPS)
ADAPTIVE TARGETING DATA LINK (ATDL)
TACS/SACC
SITE NAVIGATION SUBSYSTEM (SNS)
AIRBORNE MISSION SUBSYSTEM (AMS)
FEBA
THREAT EMITTER

PRECISION LOCATION STRIKE SYSTEM
Artist's Concept

b. **STATUS**: PLSS TRIAD aircraft test missions, which began in April 1985, have demonstrated system performance approaching or exceeding the threshold levels required for Air Force Systems Acquisition Review Council (AFSARC) IIIA milestone review. In October 1985 we awarded the construction contract for the PLSS hardened bunker. In Fiscal Year 1986 we will conduct DT&E/IOT&E at the contractor's facility and at Nellis AFB, Nevada. In 1986 we expect AFSARC IIIA decision on a limited production/refurbishment including advanced buy and long lead spares procurement. The AFSARC IIIA decision was delayed due to contractor integration difficulties during integration test flights. As a result, it will take longer to accumulate the required test data. We will conclude DT&E/IOT&E in Fiscal Year 1987 leading to a full production decision in mid 1987. We will refurbish the full scale development assets for deployment to the European hardened bunker.

5. **Joint Tactical Fusion Program**

a. **MISSION**: The Joint Tactical Fusion Program is developing the Army All Source Analysis System and the Air Force Enemy Situation Correlation Element (ENSCE) to rapidly receive, correlate, store and disseminate enemy target data from a large number of near-real-time, multi-discipline sensors. This data will be used in the battle management process by the Air and Ground Commanders and their staffs.



ENEMY SITUATION CORRELATION ELEMENT

b. **STATUS**: The ENSCE will satisfy Air Force requirements as stated in Tactical Air Forces Statement of Need 319-82. In Fiscal Year 1985 all system software and hardware contracts were awarded. A Preliminary Design Review was conducted in November 1985 and a System Critical Design Review is planned for August 1986. Delivery of the ENSCE baseline system will occur in Fiscal Year 1989. The Production Decision is scheduled for Fiscal Year 1990.

6. Tactical Air Control System

a. **MISSION**: The tactical air forces require a highly developed, reliable, positive control system to fully exploit the inherent capabilities of tactical air power. The Tactical Air Control System (TACS) provides the means through which the Air Force Component Commander exercises battle management control of his forces to accomplish his assigned mission. This program provides for major improvements to the existing TACS which was deployed in the sixties and is nearing the end of its useful life.

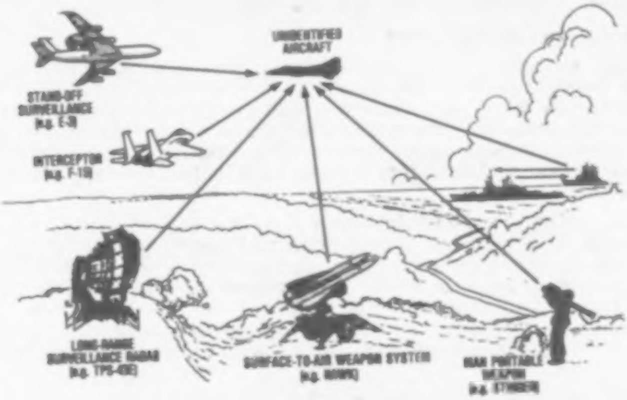
b. **STATUS**: In coordination with the Marine Corps, we are working to develop and acquire the Modular Control Equipment (MCE) to replace the aging TACS subsystems. MCE will provide the capability to handle a significant increase in C^3 workload, enhance service interoperability and reduce life cycle support costs. The Ground Attack Control Center System will incorporate MCE hardware components with additional software programs to provide the TACS with the capability to more rapidly control air attacks against time-sensitive mobile ground targets.

In addition to MCE production, we are procuring Ultra-Low Sidelobe Antennas and Anti-Radiation Missile Alarm Systems and continuing the Anti-Radiation Missile Development program for the AN/TPS-43E tactical radars. These will improve the radar's jam resistance and increase its survivability against anti-radiation missiles.

TACTICAL AIR CONTROL SYSTEM

7. Combat Identification System

a. MISSION: The Combat Identification System (CIS) will provide long-range reliable, secure identification of airborne targets in all weather, and in hostile electromagnetic countermeasure environments. Long-range identification optimizes the use of beyond visual range weapons to offset the Soviet numerically-superior threat. The thrust is to develop the Mark XV Identification Friend or Foe (IFF) system to replace the current Mark XII system. This is a tri-service effort in cooperation with our NATO allies thus ensuring interoperability.


UNIDENTIFIED AIRCRAFT
STAND-OFF SURVEILLANCE (e.g. E-3)
INTERCEPTOR (e.g. F-15)
LONG-RANGE SURVEILLANCE RADAR (e.g. TPS-43E)
SURFACE-TO-AIR WEAPON SYSTEM (e.g. HAWK)
MAN PORTABLE WEAPON (e.g. STINGER)

COMBAT IDENTIFICATION SYSTEM
Artist's Concept

b. STATUS: The Air Force is the lead Service for the Mark XV development. We, along with our NATO allies, have reached an agreement with the German government on the frequency band to be used and expect to complete technical refinements to this agreement by December 1986. The Mark XV efforts are presently in the Demonstration/Validation phase. In response to OSD direction, we restructured the Demonstration/Validation phase of the program and revised the Test and Evaluation Master Plan. Following OSD approval of the restructured program, we began fabricating several flyable advanced development models. During Fiscal Year 1986 we will complete the advanced development models, prepare Full Scale Development specifications, and the Request for Proposals. In Fiscal Year 1987 we will begin core, service-unique, and NATO interoperability testing of the advance development hardware and prepare for a DSARC II full scale developmen decision leading to a mid Fiscal Year 1988 start.

8. Infrared Search and Track System

a. MISSION: The Infrared Search and Track System (IRSTS) will increase aircraft survivability by providing a nonradiating capability to detect at increased range high altitude and/or low radar cross section targets. This passive intercept capability complements the intercepting aircraft's radar. Host aircraft for this system are the Navy F-14D and the USAF F-15. This technology is also applicable to the F-16 and Advanced Tactical Fighter (ATF) aircraft.

b. STATUS: This joint USAF/Navy effort transitions IRST technology into full scale development and pilot production. We released the request for proposal in September 1985 and expect to award a contract in April 1986. Close USAF/Navy cooperation during technology development will permit deliveries of Navy integration test units for the F-14D in March 1988. A joint USAF/Navy production decision will occur in Fiscal Year 1990.

9. Joint Tactical Communications Program

a. MISSION: The TRI-TAC program develops digital communications equipment for tactical operations. This program replaces the aging and outdated equipment now in use with a secure, anti-jam communications network. Equipment developments include transmission and switching equipment, system control facilities, local distribution equipment, terminal devices and interface equipment.

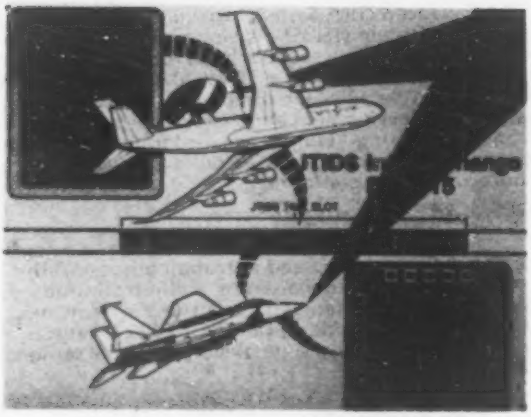
b. STATUS: The majority of TRI-TAC subsystems will continue in production during Fiscal Year 1987, including the AN/TRC-170 troposcatter radio, a family of digital message and voice switches and terminals, and Communications Nodal Control Equipment which performs automatic technical control functions. RDT&E efforts in Fiscal Year 1987 will continue to support design of peculiar support equipment for these systems, the integration and fielding of TRI-TAC communications equipment and start full scale development of electromagnetic, counter-counter measures capability of the AN/TRC-170 radio.

TRI-TAC

10. Joint Tactical Information Distribution System

a. **MISSION**: Critical information existing within the combat area must be made available quickly to combat units. The Joint Tactical Information Distribution System (JTIDS) system will provide secure message traffic, work in a severe jamming environment, and prevent hostile forces from intercepting and using transmitted information. JTIDS will provide sufficient connectivity and capacity to permit rapid and secure exchange of necessary command, control, and status information among all JTIDS equipped units in the tactical theater. This information is available to any user in real time. JTIDS will connect E-3 aircraft, combat and support aircraft, and ground, and shipboard command, control and surveillance centers. The NATO working group for the Mutifunctional Information Distribution System (MIDS) has recommended the adoption of JTIDS. On October 16, 1985, the Navy cancelled the Navy JTIDS program. In November 1985, OSD selected the Air Force JTIDS as the DoD JTIDS system.

b. **STATUS**: During 1985, we continued development of the E-3/ground (Class 1) terminal depot support equipment and the Class 2 fighter terminal. We also began development of a high powered version of the Class 2 terminal to be integrated into the AWACS aircraft and the ground Module Control Equipment (MCE) to provide these platforms with Tactical Digital Information Link "J" (TADIL J) JTIDS message standard capability. We conducted a successful demonstration flight of an F-15 equipped with a JTIDS Class 2 terminal on June 18, 1985. The F-15 transmitted and received voice and digital data to the JTIDS system exerciser unit located on the ground. We began DT&E ground testing in October 1985. Formal Flight testing begins in the second quarter of Fiscal Year 1986. In Fiscal Year 1987, we will complete IOT&E of the Class 2 fighter terminal for the F-15 We expect to make the Class 2 terminal production decision following IOT&E with first production deliveries beginning in mid 1989. Air Force RDT&E funds are included in the OSD common JTIDS funding request.



JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM

Artist's Concept

11. Advanced Communication Systems

a. MISSION: We must provide anti-jam Ultra High Frequency (UHF) and Very High Frequency (VHF) voice communications for our tactical fighter forces. The HAVE QUICK II program is applying demonstrated technologies to meet much of our requirement for jam resistant tactical command and control communications. The Single Channel Ground and Airborne Radio System (SINCGARS-V) is being developed for our tactical forces requiring direct communications with Army, Navy, and NATO forces. In addition, we have developed the Enhanced Joint Tactical Information Distribution System (EJS) wave form to provide a high anti-jam voice capability for potential application in future integrated communication systems to meet the long-term threat.

b. STATUS: The HAVE QUICK II program is developing operational enhancements and performance improvements to the frequency hopping HAVE QUICK system which we began deploying in 1981. During Fiscal Year 1985, we continued vulnerability analysis of the HAVE QUICK system and continued full scale development of improvements. We began production of expanded memory boards, and continued procuring HAVE QUICK capability for additional air and ground platforms. During Fiscal Year 1986 and Fiscal Year 1987, we will continue to develop and begin production on other improvements such as new control heads and alternate time dissemination.

The airborne SINCGARS-V system used in our close air support role is a form, fit, function replacement for the ARC-186 airborne radio. We completed source selection and began full scale development (FSD) of the airborne radio in Fiscal Year 1985. In Fiscal Year 1986 we will design, fabricate, and conduct in-plant test of DT&E/IOT&E hardware. In Fiscal Year 1987, we will complete FSD of the airborne radio including DT&E/IOT&E and finalize plans to exercise initial production options. We will also begin procuring Army-developed ground SINCGARS-V radios for our forward air control units.

The Enhanced JTIDS System capability will utilize the Joint Tactical Information Distribution System (JTIDS) developed Time Division Multiple Access (TDMA) architecture and the JTIDS frequency band for training and interoperability. For higher jam resistance, we will use a TDMA-like architecture in an alternate frequency band. In Fiscal Year 1985, we completed the system design review, and began efforts to fabricate development hardware. In Fiscal Year 1986 we will focus major efforts on transferring EJS design information to the Integrated Communication Navigation Identification Avionics (ICNIA) program for potential application in future production platforms.

12. Tactical Air Reconnaissance System

a. **MISSION**: Battlefield commanders need a continuing flow of intelligence information for planning and execution purposes. This information is collected by a mix of tactical reconnaissance platforms including standoff and penetrating manned and unmanned vehicles. These systems must provide near real-time detection, location, and classification of tactical targets. These systems include a pod or unmanned vehicle, a suite of electro-optical sensors, and a ground processing or exploitation station.

b. **STATUS**: The follow-on tactical reconnaissance pod has been renamed the Tactical Air Reconnaissance System (TARS) to more accurately reflect program activities. Both names are part of the overall concept of Advanced Tactical Air Reconnaissance System (ATARS) and represent the manned efforts. TARS focuses on the development of a common suite of electro-optical sensors, data-links, recorders and ground station for application to the RF-4C and follow-on reconnaissance pod. Both the ground station and common sensor suite will have commonality with and application to the Unmanned Air Reconnaissance System. We envision that the form fitting pod will be carried on an F-15 or F-16. Fiscal Year 1985 and Fiscal Year 1986 TARS funding efforts were contained in the TARS program line. During Fiscal Year 1986, we will flight test a follow-on reconnaissance pod to determine stability and vibration characteristics, validate the sensor concept, and evaluate the ground station testbed. During Fiscal Year 1987, we will begin sensor pod design efforts, initial RF-4C engineering activity, and full scale development efforts of the sensor suite and ground processor capability.

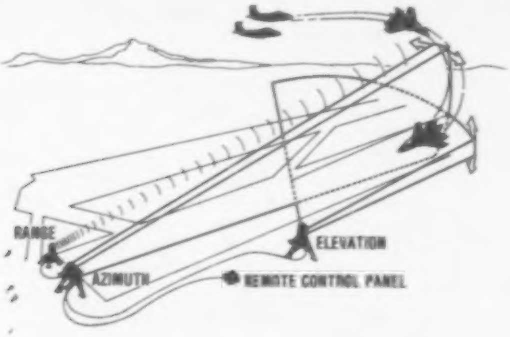
13. Unmanned Air Reconnaissance System

a. **MISSION**: As a complimentary capability to the Tactical Air Reconnaissance System, the Unmanned Air Reconnaissance System (UARS) is a program that will also meet a portion of the tactical commander's needs for detection, location and classification of tactical targets. The UARS will use a common sensor suite to include electron-optical sensors, data-links, and recorders provided under the Tactical Air Reconnaissance System program. UARS launch and recovery options are still being investigated.

b. **STATUS**: The UARS will use the common electro-optical sensors and ground exploitation station technology being developed for the TARS program. Following the pod tests in Fiscal Year 1986, reconnaissance requirements will be coordinated with the Navy and a reconnaissance roadmap and program development for achieving the required force structure. In Fiscal Year 1986, cost/performance trade-offs will be performed to determine if an expendable or recoverable vehicle will be the most cost effective option. UARS studies and concepts will be evaluated in conjunction with the Navy reconnaissance efforts. A full-scale development decision will be made in Fiscal Year 1989.

14. Traffic Control and Landing Systems

a. **MISSION**: The Traffic Control and Landing Systems (TRACALS) program provides the Air Force with the air traffic control and landing equipment required for safe, efficient, worldwide, all weather flying operations. The mission need is to provide take-off, enroute, and landing guidance and surveillance in order to meet wartime sortie requirements. In peacetime, the need is to support training, logistics, and other operational flying with maximum safety.



TRAFFIC CONTROL AND LANDING SYSTEMS

b. **STATUS**: The U.S. has agreed to adopt the international standard Microwave Landing Systems (MLS) in place of our existing Precision Approach Radars and Instrument Landing Systems. In Fiscal Year 1987, TRACALS plans to develop a Mobile MLS; update of the air traffic control surveillance equipment to make our fixed base systems survivable in combat. A new Mobile Radar is being planned for replacement of 1950 vintage systems. Existing Marine Air Traffic Control and Landing Systems development will be used where possible.

E. Defense Suppression and Electronic Combat

BACKGROUND

1. **Rationale**: Increasingly complex high technology weapon systems are appearing on both sides of the modern battlefield. Many of these systems make use of some portion of the electro-magnetic spectrum. In addition to radio, and radar and infrared subsystems, new systems make use of optical, electro-optical, ultraviolet and laser technology. For our forces to operate effectively, they must have clear access to these portions of the electro-magnetic spectrum. At the same time, they must have the capability to deny enemy forces use of this spectrum by exploiting their electro-magnetic vulnerabilities. This exploitation can take the form of destruction or deceptive measures or self-protection techniques such as chaff, flares, radar warning, and jamming systems, application of radar absorbent material, or employment factors.

2. Threat: The Soviet Union has the most comprehensive air defense system in the world. In the European theater alone the Soviets have concentrated over 10,000 surface-to-air missile (SAM) launchers and antiaircraft artillery (AAA) pieces. One of their newest weapons, the SA-11, features an on-board radar, increased mobility, and increased target handling capability. The Soviet SA-X-12 will be able to counter high performance aircraft and will also have capability against tactical ballistic missiles. This air defense system provides broad coverage for all altitude defense in all weather conditions. In addition, the Soviets are developing their MAINSTAY AWACS program. This aircraft will substantially increase the Soviet early warning and command and control capabilities. Soviet research and development continues to develop well designed, technically advanced air defense and Command, Control and Communications systems. It is these improvements in surveillance, identification and target tracking capabilities that our efforts are designed to over come.

3. Current Systems: Our current assets include the highly effective F-4G Wild Weasel/HARM weapon system, the EC-130 Compass Call aircraft, the EF-111 Tactical Jamming System and a variety of Electronic Countermeasures pods and chaff and flare dispensing systems.

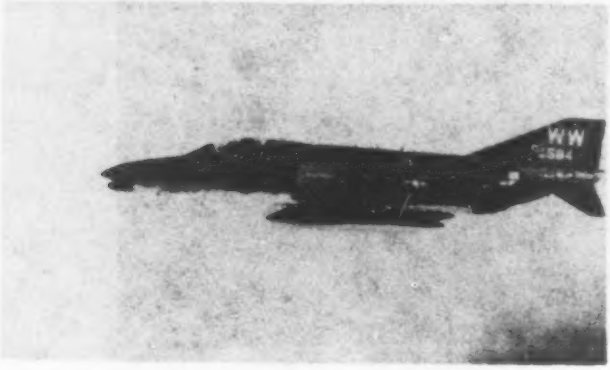
4. Future Systems: Our thrust is to provide updated or new capabilities to our aircraft already in service. We are updating the F-4G Wild Weasel and EF-111 Raven systems to permit them to operate effectively into the 1990s. For our fighter aircraft we are updating our present jamming pods, flare dispensers, and radar warning systems. We are developing new capabilities such as the internal Airborne Self-Protection Jammer for the F-16. We are also studying our future Suppression of Enemy Air Defense needs.

Fiscal Year 1987 Programs

5. F-4G Wild Weasel

a. MISSION: The F-4G Wild Weasel can autonomously detect, identify, locate, engage, and destroy hostile radars. The F-4G Wild Weasel can be employed in a counter-air role as a penetration strike force escort, as an independent hunter-killer force, or as a standoff defense suppression force. We are updating the Wild Weasel systems so that the force can defeat the advanced threat radars being deployed now and through the 1990s. The APR-38 Radar Warning and Attack System is the backbone of the F-4G Wild Weasel. To update this mid-1970's design, we are increasing the capacity of the on-board computer, increasing receiver frequency range, and increasing system processing speed. These updates will allow the Wild Weasel aircraft to defeat increasingly complex radar signals in a denser signal environment. With these updates, we will also be able to fully exploit the capabilities of the High Speed Anti-Radiation Missile (HARM).

b. STATUS: Phase I of the update (increased computer capacity) began DOT&E/IOT&E in April 1985. Results look good and we expect to make a production decision in March 1986. We will begin deliveries and field installation of the phase I computers in Fiscal Year 1987 with an Initial Operational Capability (IOC) planned for September 1987. We completed circuit design feasibility of all critical components for Phase II (new receiver for increased frequency coverage and capability in a denser signal environment) and started fabricating the prototype units. Phase II was delayed due to vendor problems and receiver design miniaturization efforts. In Fiscal Year 1986, we will conduct receiver group airworthiness qualification and reliability testing, low frequency synthesizer airworthiness qualification, and complete software programming in preparation for flight test. We begin Phase II DT&E/IOT&E in July 1987 with testing continuing into Fiscal Year 1988. We will procure Phase II equipment beginning in Fiscal Year 1988 with IOC occurring in Fiscal Year 1990.



F-4G WILD WEASEL

In the Wild Weasel request, we have also included funds to conduct concept evaluation/risk reduction efforts in support of a follow-on Wild Weasel. This effort will determine the optimum approach to accomplishing the Suppression of Enemy Air Defense mission in the future.

6. EF-111 Tactical Jamming System Update

a. MISSION: The EF-111 Raven provides tactical jamming of early warning, acquisition, and ground control intercept radars in support of United States and Allied tactical strike operations. The EF-111 Tactical Jamming System denies enemy command and control centers the necessary range, azimuth, and altitude information used to cue their interceptors, surface-to-air missiles and antiaircraft artillery. The Raven can either accompany the strike force or act as a standoff jammer.

b. STATUS: The present EF-111 jamming suite was baselined in 1974. The update to counter Soviet advances since then will incorporate a new encoder, a new computer, a MIL-STD-1553B data bus, two reprogrammable exciters, and a new band 7/8 antenna. We are also making software changes to improve management of system power to concentrate the jamming signal on the radars of interest. Our update efforts are being closely coordinated with the Navy so that our efforts and their efforts to update the EA-6B jamming suite are not duplicative and provide synergistic results for both programs. In October 1984 we awarded a firm fixed price development contract with prepriced production options. In Fiscal Year 1986 we will fabricate full scale development kits and integrate them into test aircraft. The first kit delivery will be in May. We will also begin DT&E/IOT&E which will be completed in Fiscal Year 1987. We expect to make a production decision in Fiscal Year 1988.

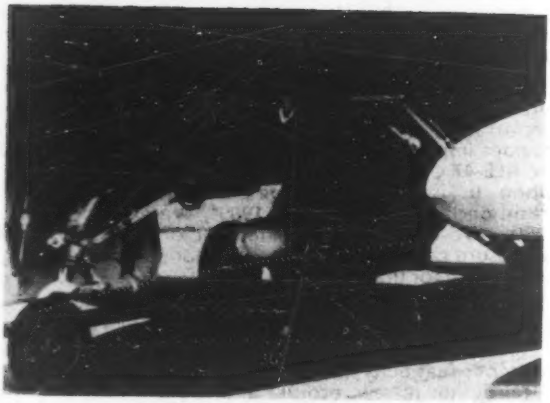
EF-111 RAVEN

7. Electronic Countermeasures Pods

a. MISSION: Electronic Countermeasures (ECM) pods provide a self protection capability for tactical aircraft which because of space, power, or cooling limitations or prohibitive retrofit costs, lack an internal countermeasures system. These aircraft include the A-7, the A-10, the F-16A/B/D, and the F-4. Our current inventory of pods includes ALQ-131 Block I & II pods, ALQ-119 pods (and the upgraded ALQ-119 pods). Continuous advances in Soviet air defense capabilities force us to upgrade/replace our inventory. By equipping tactical aircraft with these pods we can enhance their survivability. We also then will be able to use our limited, dedicated jamming asset, the EF-111 Raven, more efficiently.

b. STATUS: We are acquiring the ALQ-131 pods with improved reliability, maintainability, and performance. This pod gives the F-16A (and F-16C aircraft until the Airborne Self Protection Jammer (ASPJ) is available) a self-protection capability. During Fiscal Year 1985 we pursued Very High Speed Integrated Circuits technology applications in ALQ-131 components which were in various design stages.

During Fiscal Year 1986, we will begin Qualification Test and Evaluation of an upgraded ALQ-119 pod. We are currently accepting delivery of the first 70 systems. These modification kits are installed by both contractor and Air Force depot personnel. We will begin Qualification Operational Test and Evaluation in Fiscal Year 1986.



ALQ-131 POD MOUNTED ON F-16

8. Protective Systems

a. MISSION: This program develops new and improved self-protection equipment for Air Force strategic and F/FB-111 aircraft. This equipment includes infrared, optical, and electronic countermeasures and improved dispenser systems. This program maintains and updates computer threat simulation programs for evaluation of electronic warfare equipment. Funds are also used to keep our antenna test ranges current. We will concentrate on the F/FB-111 related activity.

b. STATUS: We are upgrading the F/FB/EF-111 aircraft countermeasures system for accurate and optimum use of chaff and flares. We are also developing an improved tail warning system for accurate detection of air-to-air and surface-to-air missiles. We plan to complete full scale development and make a production decision on the ALE-40 dispenser in Fiscal Year 1986. We should begin flight testing in Fiscal Year 1987.

9. Tactical Protective Systems

a. MISSION: This program develops new and improved self-protection electronic warfare equipment for tactical strike, air superiority, airlift and reconnaissance aircraft. We are currently working on systems for the F-15, F-16, A-10, F-4, special operations and airlift aircraft. These updates will provide effective aircrew warning and countermeasures to protect against sophisticated airborne and surface-to-air threats.

b. STATUS: For the F-15 aircraft we are upgrading its self-protection suite, the Tactical Electronic Warfare System (TEWS). The TEWS includes a radar warning receiver (ALR-56), an internal countermeasures system, an electronic warfare warning system, and a countermeasures dispenser. During Fiscal Year 1985, we conducted ground testing and developmental flight testing of individual systems and began TEWS integration. Since November 1984, production line F-15 C/D aircraft are equipped with Group A provisions for the ALE-45 Countermeasures Dispenser (CMD), ALR-56C and ALQ-135. In Fiscal Year 1986, we will begin full-up hardware/software development integration and testing. In Fiscal Year 1987, we will complete IOT&E of the TEWS and make a low-rate initial production decision. We also expect to deliver the prototype TEWS intermediate level support system.

For the F-16, we are developing a threat adaptive countermeasures dispenser, the ALE-47. In addition to being reprogrammable, the ALE-47 CMD interacts with the aircraft's Radar Warning and Jamming Systems. The interaction of these systems provides improved protection for the aircraft. We fielded two competing prototype ALE-47 C MDs. During Fiscal Year 1987, we will begin F-16/ ALE-47 CMD integration. In Fiscal Year 1989, we plan to conduct DT&E and IOT&E and make a production decision in November 1989. We expect first production deliveries in July 1990. We will begin development of a pyrophoric flare (an expendable countermeasure capable of igniting spontaneously in the air, for use against infrared missiles) sized for the F-16.

For the A-10 self-protection suite, we are tailoring systems designed for other aircraft such as the ALQ-131 pods and the ALE-47 CMD system. Our primary activity is developing a pyrophoric flare sized for the A-10. We demonstrated the concept's feasibility in Fiscal Year 1985. During Fiscal Year 1986 we will conduct critical design review, ground and flight testing of a prototype flare. We expect to complete development and flight testing by August 1987 and make a production decision shortly thereafter. ALE-47 CMD tailoring should begin in Fiscal Year 1988 and complete in Fiscal Year 1990. Similar types of projects are underway for other fighter and special operations aircraft.

10. Airborne Self Protection Jammer

a. MISSION: The Airborne Self Protection Jammer (ASPJ) (AN/ALQ-165) will increase the survivability of our tactical aircraft (USAF F-16C, Navy F-14, F/A-18, A-6E, AV-8B) when confronted by modern, diversified, radar controlled weapon systems. ASPJ is a joint AF/Navy development program for an internally mounted electronic countermeasures system. The Navy is the lead service. Both services share equally in funding the common development efforts and pay the total costs for each applicable aircraft integration effort.

b. STATUS: In Fiscal Year 1985, we delivered test articles, began reliability demonstration testing, F-16/ASPJ integration and Development Test and Evaluation (DT&E). During Fiscal Year 1986, we will complete necessary milestones so that the production verification decision can be made in July 1986. DT&E will be completed in January 1987 to enable a joint Navy/Air Force Systems Acquisition Review Council (NSARC/AFSARC) limited production decision to be made in February 1987. In Fiscal Year 1987, we will complete environmental and Air Force Electronic Warfare Evaluation Simulator Initial Operational Test & Evaluation testing and begin IOT&E flight tests. We should make our decision for joint, full scale production in March 1988. We plan a total production run of over 2200 systems with over 1200 for Air Force aircraft.

In an effort to further commonality, we are looking at installing ASPJ in systems other than the F-16C. The ASPJ is a candidate in the open competition for the updated Electronic Countermeasures (ECM) system in the F/FB/EF-111 fleet. We are also investigating the advisability of competing a pod version of ASPJ as our next generation ECM pod.

F. Theater Nuclear Forces

BACKGROUND

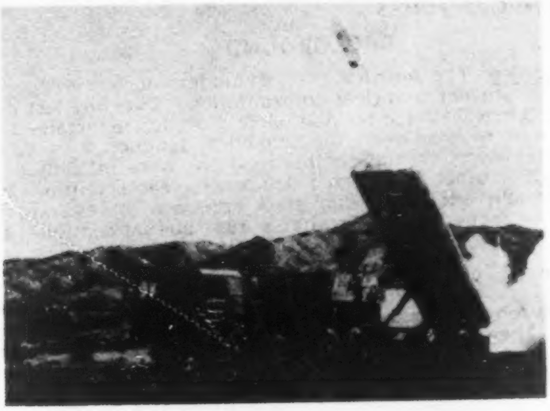
1. Rationale: The destructiveness of modern nuclear weapons makes it imperative that we prevent a nuclear confrontation. Over the last decade the Soviets undertook a massive force buildup while our posture remained essentially static. This inaction coupled with the numerical superiority of Warsaw Pact conventional forces lowered the nuclear threshold. We were left without a credible theater defense option other than strategic nuclear force intervention. In 1979 the NATO alliance formally adopted a dual track approach to restoring a credible defense option Our request in the Fiscal Year 1987 budget continues to support that decision.

2. Threat: The Soviets have deployed over 400 SS-20 mobile nuclear missile launchers. Each missile carries three warheads. The SS-20 is capable of on and off road operation which greatly enhances its survivability. Modified versions are being tested. They are expected to have greater occuracy than the present force.

3. Ground Launched Cruise Missile

a. MISSION: The Ground Launched Cruise Missile (GLCM) counters the modernization of Soviet Long-Range Intermediate Nuclear Forces, particularly SS-20s and BACKFIRE bombers. The GLCM is a highly survivable system with enough range to reach targets in the Western military districts of the Soviet Union. The GLCM helps deter a combined Warsaw Pact/Soviet force which has numerical superiority in both conventional and theater nuclear forces.

b. STATUS: The Air Force accepted program management responsibility for the GLCM on September 4, 1985. Formerly, the GLCM was managed by the Joint Cruise Missile Program Office. The GLCM development program is winding down. During Fiscal Year 1985, we pressed forward with development and nuclear certification of Full Operational Capability (FOC) software for the operational flight system and the Data Transport Device production system. We successfully completed Electromagnetic Pulse testing of the launch equipment. In Fiscal Year 1986, we will complete FOC software development and nuclear certification for the weapons control system and missile procedures trainer. We will also implement material improvements resulting from reliability/maintainability analyses. During Fiscal Year 1986, we will complete these improvements, establish a final system baseline, and complete development of a plug-in Operational Test Launch Payload which will permit operational missile testing without first disassembling the missile.



GROUND LAUNCHED CRUISE MISSILE

G. Chemical Forces

BACKGROUND

1. Rationale: In any conventional conflict, chemical weapons if employed, could significantly influence the final outcome. Our objectives in chemical warfare are to be able to effectively retaliate and limit our vulnerability with the use of personal protective systems.

2. Threat: The Soviets have incorporated the ability to function in the chemical environment with all their weapons systems. They consider chemical warfare one of the strengths of their forces and maintain a considerable chemical warfare advantage over the U.S. and NATO Alliance. Although we would like to eliminate all chemical weapons, our arms control negotiators have not made any substantial progress toward concluding a comprehensive treaty to ban the weapons.

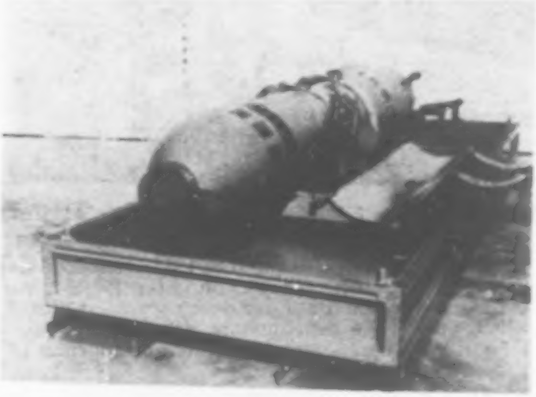
3. Weapons: Since our current stockpile is no longer a credible deterrent, we must demonstrate our commitment to restore this capacity. The Joint Chiefs believe that a modern chemical weapons capability is a critical part of this country's deterrent efforts. The Binary Chemical Weapon program is the key effort in supporting our negotiators.

4. Protective Systems: Of course offensive capability is only part of our chemical warfare deterrent capability. We must also protect our troops against the effects of chemical agents. We have fielded personal protective equipment - mask, hood, special suit, gloves and boots - however, it is cumbersome, fatiguing, and limits the effectiveness of our people. Tasks which are difficult to perform under ideal conditions are impossible in a chemical environment. To preserve our combat capability, we must provide not only better individual protective equipment, but also collective shelters where our troops can eat, rest, and perform maintenance in an uncontaminated environment. We must also provide equipment to detect and warn of agent presence and decontaminate our personnel and their equipment.

Fiscal Year 1987 Programs

5. Binary Chemical Weapon

a. MISSION: The binary chemical weapon (Bigeye) provides a flexible, safe, chemical retaliatory capability. These weapons contain two non-lethal components one of which is inserted into the bomb body just prior to uploading onto the aircraft. After the bomb is released from the aircraft the two components are mixed forming the lethal chemical agent. Binary chemical weapons are less hazardous to maintain, stockpile, and transport. They have none of the dangers inherent in the unitary weapon. Our current unitary stockpile is very old and is hazardous to maintain and store.



BINARY CHEMICAL WEAPON

b. STATUS: In conjunction with the Navy, the USAF is conducting an Initial Operational Test and Evaluation (IOT&E) of the Bigeye chemical weapon. These tests are proving the ability of Bigeye to fill the retaliatory capability void. The IOT&E results will be used to support a limited production decision which is scheduled for mid Fiscal Year 1986. In anticipation of a favorable decision, our Fiscal Year 1987 request contains funds to support this production decision.

6. Chemical/Biological Defense Equipment

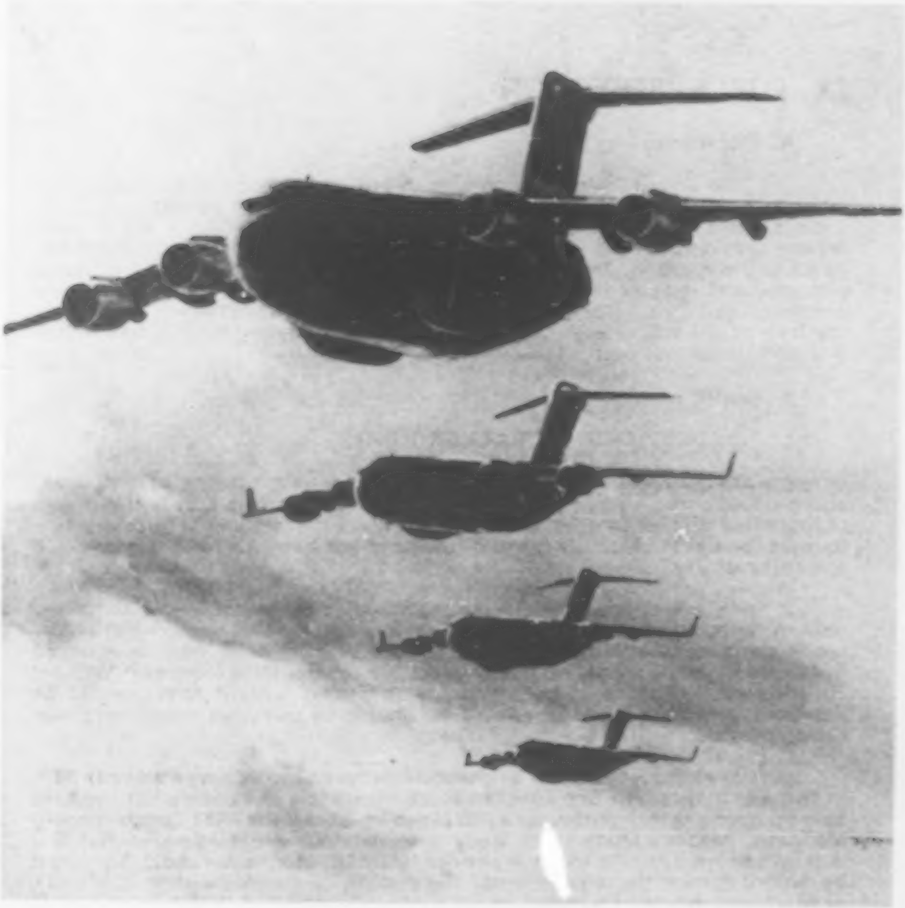
a. MISSION: We must develop and acquire systems which will allow our forces to sustain combat capability in a chemical/biological environment. We must provide systems to detect, warn against, protect and decontaminate personnel and equipment. Collective protection systems will provide a chemical-free environment for rest and relief and improve performance of personnel in protective clothing. A new generation of individual protective equipment will overcome the shortfalls of current protective gear. These shortfalls include induced heat stress, restricted movement, loss of vision and loss of communications. Detection and warning will provide timely indication of attack as well as to signal an all clear when the chemical agent is no longer a threat. These systems will minimize the amount of time our troops need to wear protective clothing. The Air Force is lead service for aircrew unique individual protective equipment; however, we coordinate our efforts closely with our Army and Navy counterparts.

MAINTENANCE CREW IN CHEMICAL/BIOLOGICAL SUITS

b. STATUS: During Fiscal Year 1985 we successfully operated six prototypes of the Survivable Collective Protection System (SCPS-2) during the SALTY DEMO exercise in Europe. We also continued development of a set of transportable shelters. We will continue the development activities of these transportable shelters through Fiscal Year 1987. We will continue production of the SCPS-2 in Fiscal Year 1987.

In the individual protection area, work continues on the Aircrew Eye-Respiratory Protection System, the impermeable suit for ground crews and aircrew chemical protective ensembles. In Fiscal Year 1987, we will complete testing and begin production of the aircrew eye-respiratory protection system and complete testing of the aircrew ensemble. We will begin fielding the improved MCU-21P ground mask in Fiscal Year 1987.

Chemical agent detection and warning requirements will receive increased emphasis in Fiscal Year 1986 with initial production of the Surface Contamination Monitor. Then in Fiscal Year 1987 we will begin procurement of the Chemical Agent Monitor, a simplified, light weight unit for use by our airlift forces. We will also begin efforts to develop an integrated chemical detection and warning system. In Fiscal Years 1986 and 1987, equipment decontamination research and development efforts will accelerate. We will work jointly with the Army Chemical Research and Development Center to develop a fixed site avionics equipment decontamination unit based on a Freon solvent. This will improve our ability to conduct sustained operations when repair of aircraft avionics is required.



C-17s IN FORMATION
Artist's Concept

IX. FORCE PROJECTION

A. Objectives

The United States must be able to project combat forces worldwide in order to protect its vital interests, deter aggression, or limit potential conflicts. Today's world situation and the delicate balance of power which exists in many regions requires us to be ready on a moment's notice to deploy adequate forces based on the situation. The primary objective of force projection is to get adequate personnel and equipment to the right place at the right time. Proper and timely use of force projection can make the difference in controlling a situation or conflict at a low level of intensity or even deescalating it versus increasing hostility to a higher and more dangerous level.

B. Airlift

BACKGROUND

1. Rationale: Airlift is one part of the mobility triad along with sealift and prepositioning. While each has benefits and deficiencies, it is the proper utilization of all three together that provides the greatest amount of force structure to meet the threat. Mobility forces provide the link between force structure and combat capability.

Airlift is essential because it is the only element of mobility which has the responsiveness to meet the critical demands in the early days of a conflict before sealift can become effective. It also provides the link between prepositioned material and the personnel needed to make the combat force complete. Without an adequate airlift capability, our ability to project combat forces would be significantly degraded and we would be unable to meet our extensive global commitments.

Inter and intratheater airlift shortfalls have been documented since 1974 in 18 major studies. The one accepted as the benchmark and upon which we have based our long-term intertheater airlift capability goal is the 1981 Congressionally Mandated Mobility Study. The study analyzed four worldwide scenarios and determined what million ton-mile per day (MTM/D) intertheater capability would be needed to meet the requirements. The study recommended adding 20 MTM/D, of which half should be outsized, to the Air Force's projected 1986 capability of 46 MTM/D. It must be noted that the 66 MTM/D (46 plus 20) goal was a fiscally constrained recommendation and did not meet any of the four scenario intertheater lift requirements. It does represent increased force projection capability to address force projection requirements and is attainable within reasonable fiscal guidelines.

2. Threat: The Soviet capability to project combat forces has been steadily increasing and is expected to continue in the future. The recent unveiling of their C-5 type airlifter, "The Condor", is evidence of their commitment to increasing airlift capability and provides them with the ability to move large, outsize combat equipment over long ranges. Additionally, terrorist activity around the world is increasing and places an even greater demand on our ability to employ

the correct force at the right time. Our geographic location places a premium on the ability to quickly respond to hostilities in Europe, the Middle East, and the Far East. A rapid and sufficient airlift capability could prevent substantial losses and avoid an escalation of hostilities.

3. Current Systems: The airlift mission is currently performed by a combination of C-5, C-141, KC-10, Civil Reserve Air Fleet (CRAF), C-130, and Operational Support Airlift (C-12/C-21)/Special Air Mission (C-20) aircraft. These resources are operated in active duty, active/associate reserve, and air reserve force (Air Force Reserve and Air National Guard) units based around the world. The CRAF program is comprised of civil passenger, cargo, and cargo convertible aircraft that are operated by commercial airlines and can be called up in various stages during certain contingency/emergency situations.

In 1983, we began a modernization effort which addressed the need to increase capability and modernize the force structure. The C-5B, CRAF enhancement, CT-39 and C-140 replacement programs were initiated. The KC-10 program was expanded and low level development of the C-17 continued.

In Fiscal Year 1986, three of these programs were completed. The CT-39 fleet has been replaced on a one-for-one basis with 80 C-21s (Lear 35) and 40 C-12s under a lease program. This replacement is complete and requested Fiscal Year 1987 funding is for Operations and Maintenance money to manage the lease/contractor support contract. Final procurement of 11 total C-20s (Gulfstream III) was completed in Fiscal Year 1986 to replace the C-140 fleet with final delivery in Fiscal Year 1987. The CRAF enhancement program was also finished with funding of 19 total B-747 cargo convertible modifications. Fiscal Year 1987 will be the last year of KC-10 and C-5B procurement.

These acquisitions along with other enhancement/modification programs (C-5A/C-130 wing mod, communication and navigation upgrades, etc.) formed our overall near term improvement program. We worked to enhance those aircraft we already have and acquired new systems that would be available at the earliest possible date and at the lowest technical risk. The following chart summarizes the number of our current airlift forces operated by the active, reserve, and civil reserve forces.

U.S. AIRLIFT FORCES

Military Aircraft (PAA)		Civil Reserve Air Fleet	
Type	Number**	Type	Number**
	(Active/Reserve)	Domestic	37
C-5	63/8	Alaskan	15
C-141	234/0*	Short-range International (cargo)	20
C-130	216/302	Short-range International (pax)	6
KC-10	38/0*	Long-range International (cargo)	63
		Long-range International (pax)	225

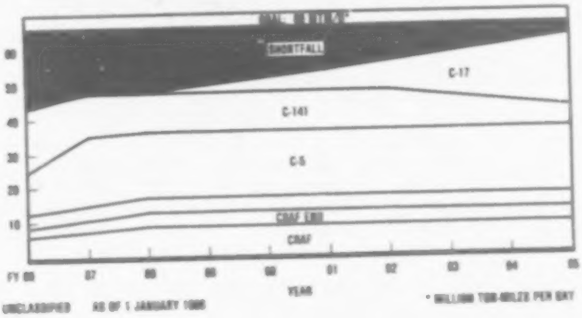
* C-5, C-141, and KC-10s are jointly operated by Active and Associate Reserve Units. Eight C-5s were transferred o the Air Reserve Forces in 1985. C-141s will begin to transfer in Fiscal Year 1986 and continue through Fiscal Year 1987.

** Full Activation

(As of 1 January 1986)

4. Future Systems: The Air Force program in the future is primarily comprised of two parts. First, we will continue enhancement of current systems through upgrade or modification. The other part of our long-term program is development and procurement of the C-17. Deficiencies in the airlift system, manpower constraints, high reliability and maintainability, and affordability were primary considerations used in our decision to buy the C-17. The multi-role capability and low life cycle cost of the C-17 made it the best choice to meet overall airlift requirements, counter the threat and provide a credible force projection capability well into the 21st century.

5. Airlift Master Plan: In 1983, the Air Force completed work and published the USAF Airlift Master Plan. This document laid out a roadmap and justification for pursuing the acquisition strategy mentioned previously. It accepted our near term enhancements (KC-10, C-5B and CRAF) as a baseline and examined what was the best approach to meet long-term objectives for increased capability and force structure modernization. The plan concluded that procurement of the C-17 best met the objectives and at the lowest life cycle cost. The chart below outlines our plan for meeting the 66 million ton-mile per day requirement.

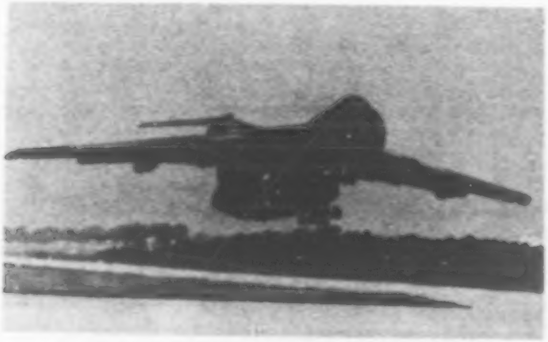


U.S. INTERTHEATER CARGO AIRLIFT CAPABILITY PLAN

Fiscal Year 1987 PROGRAMS

6. C-5B

a. MISSION: The C-5A is the largest free-world aircraft in operation today and performs the intertheater or strategic airlift mission. It augments the C-141 fleet in performing this mission and is our only airlifter capable of carrying outsize cargo and equipment. This equipment comprises most of the combat forces firepower items (self-propelled artillery, attack helicopters, fighting vehicles, tanks, large trucks/vans, etc.). The current fleet of C-5A aircraft provides nearly 30 percent of our total intertheater airlift capability. This will increase to nearly 40 percent with introduction of the C-5B and outsize airlift aircraft will increase 65 percent. The C-5B is critical to the U.S. meeting its near term objectives to increase intertheater airlift capacity and provide a viable force projection capability to protect our interests worldwide.



C-5B GALAXY

b. STATUS: The C-5B program is being executed under a firm fixed price contract awarded in December 1982. The initial award in Fiscal Year 1983 was for one aircraft with four annual options that run through Fiscal Year 1987. The Fiscal Year 1984 (4 aircraft) and Fiscal Year 1985 (8 aircraft) procurement contracts have been executed which brings total C-5B procurement to 13 aircraft. In Fiscal Year 1986, we plan to procure 16 more C-5Bs with the last procurement of 21 aircraft in Fiscal Year 1987. The first C-5B rolled out in July 1985 and first flight was conducted on September 10, 1985. A test program totalling some 66 hours was performed on the first aircraft. This aircraft was delivered to the Air Force on December 28, 1985. The last delivery will be completed in early Fiscal Year 1989. The 50 new C-5B aircraft will be added to our current fleet of 77 C-5A aircraft for a total C-5 force structure of 127 aircraft. As new C-5Bs enter the inventory, C-5As will be transferring to Air Force Reserve and Air National Guard units. Eight C-5As have already been transferred, five to Kelly AFB Texas and three to Stewart Field New York.

7. C-17

a. MISSION: Acquisition of the C-17 will bring our last increment of intertheater airlift capability to the minimum level recommended in the 1981 Congressionally Mandated Mobility Study of 66 million ton-miles per day. Because of the C-17's unique ability to perform the intratheater or tactical airlift mission as well, we will get our first tactical outsize airland and airdrop capability. The ability to deliver outsize cargo/equipment within the theater of operations is critical to meeting the need for increased battlefield mobility and airlifting our modernizing combat forces. The C-17 will be the first airlift aircraft capable of performing the full spectrum of airlift missions, from intercontinental movement of personnel and cargo to low altitude parachute extraction of outsize equipment in the forward battle area. This multi-role capability provides our theater commanders and operations planners tremendous flexibility in employment and allows them to utilize the C-17 where the demand is highest, either intertheater or intratheater. With designed in reliability and survivability, the C-17 will be our most capable, survivable and lowest life cycle cost airlifter for the capability provided.

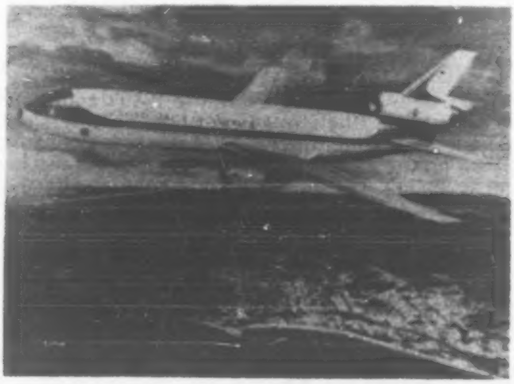
C-17

b. STATUS: Since the 1981 competitive source selection and contract award in July 1982, the C-17 program has been conducting low level research and development activities pending the formal decision to begin full scale development (FSD). Wind tunnel testing, system and airframe mock-ups, structural testing, logistics support analysis, and extensive development engineering have been ongoing. With Congressional approval of the Fiscal Year 1985 budget request and February 1985 DoD approval to begin FSD, the program has been gradually increasing the level of development effort. Preliminary design, reviews, subcontractor and vendor identification, and engine testing are underway. The Fiscal Year 1986 program will continue this increasing engineering effort and expand work in the support areas. The whole effort is directed toward critical design review, tool design, and fabrication, and initial aircraft long lead funding in Fiscal Year 1987. Procurement begins in Fiscal Year 1988 with an initial operational capability in Fiscal Year 1992. The Air Force plans to procure 210 C-17s from Fiscal Year 1988 to Fiscal Year 1998 and deploy the aircraft in active duty, active/associate reserve, and organic reserve and guard units based in the U.S.

8. Air Force One

a. MISSION: The two existing Presidential aircraft, designated Air Force One when the President is on board, are 13 and 23 years old respectively. They are becoming increasingly difficult to maintain and support because their commercial airline counterpart, the Boeing 707, is being phased out of service. In addition to being difficult to support, the aircraft do not meet Federal Aviation

Administration noise standards nor do they meet requirements for communications, range, performance, or payload. In this latter area, space is needed for an on-board medical treatment facility as well as a work area for members of the National Security Council. Also, the working conditions for the President and his staff need to be improved. The replacement aircraft will be two new wide body FAA certified aircraft with three engines or more. The contenders are the McDonnell Douglas DC-10-30 and the Boeing 747 SP and 300 models. These aircraft will be electromagnetic pulse hardened to insure safe flight and communications connectivity and will have self contained steps and electrical/air-conditioning units to permit operation with less ground support equipment.



DC-10

B-747

AIR FORCE ONE CANDIDATES

b. **STATUS**: The Air Force One Replacement Program was initiated in August 1985. Competition is critical to this program in terms of reducing costs and maintaining public confidence in Department of Defense procurement. When we analyzed the market, we determined that only two American manufacturers were producing suitable aircraft and one of them, McDonnell Douglas, would be unable to compete unless a contract would be awarded in April-May 1986. This was due to the projected closing down of their production line. Therefore, in order to maintain competition, it is imperative that we use the Fiscal Year 1986 funds prior to April 1986 in order to award the contract. The remaining money, is requested in the Fiscal Year 1987 President's Budget. The first aircraft should be delivered in the late 1988 timeframe with the second aircraft delivered in Spring 1989.

C. Aerial Refueling

BACKGROUND

1. **Rationale**: The KC-135A was designed in the 1950's and built from 1955 through 1964. In the early 1960's, the Strategic Air Command was the only major user of inflight refueling tankers, and the KC-135 force was sized to match the strategic bomber force. During the Vietnam era, the tactical forces also became dependent on air refueling to extend combat range and combat effectiveness. Moreover, air refueling was used to cut down lengthy deployment time as tactical forces were moved into various theatres of operations. Political changes evident during the early 1970's made air refueling even more important in wartime planning. Without access to enroute staging bases, our ability to project forces or resupply allies demanded the use of inflight refueling. Over the past 25 years, then, air refueling has changed from a tactic used primarily by the strategic bomber force into a tactic used by virtually every Air Force aircraft and some Naval combat aircraft. Air refueling is critical to the successful deployment, employment, and redeployment of US forces. During the late 1960's and 1970's there was no increase in the tanker force, but there was a sevenfold increase in Air Force, Navy and allied aircraft demanding air refueling support. Consequently, a significant tanker shortfall developed. In response to this shortfall, the KC-10 program was developed to add new tanker aircraft to enhance mobility operations while modification programs to the KC-135A fleet were developed to increase strategic tanker offload capability.

Fiscal Year 1987 PROGRAMS

2. **KC-10A Extender**

a. **MISSION**: The KC-10A adds significant air refueling and cargo capacity to the Air Force inventory. The "Extender" greatly improves our ability to support worldwide contingency operations while reducing our dependency on foreign operating bases. Strategic airlifter cargo loads can be significantly increased and delivery time for mission-critical cargo can be reduced because of the huge fuel offload capability and the long range of the KC-10A. For tactical fighter deployments, the KC-10A provides enroute air refueling to the fighter aircraft while carrying support equipment and personnel to ensure adequate support of the deployed fighters. The result is that fighters will be ready to fight almost immediately. With a separate air refueling boom and hose-reel system for probe-and-drogue refueling, the KC-10 is compatible with all USAF, Navy and allied aircraft. Likewise, in an "all-cargo" mode, the KC-10 provides a significant addition to our airlift capability.

KC-10 EXTENDER

b. STATUS: Procurement of our planned force of 60 KC-10As will be completed in Fiscal Year 1987 with the purchase of the last eight aircraft. In October 1985, we opened the third KC-10A base at Seymour-Johnson AFB, North Carolina. With 36 aircraft delivered through the end of Fiscal Year 1985, we are using the KC-10 to its full advantage. As an example of the aircraft's capability, consider this representative mission. Two KC-10As deployed six F-15 airplanes from Okinawa, Japan to Eglin AFB, Florida on a non-stop 14.7 hour mission. The KC-10s also carried 72,000 pounds of support personnel and cargo to ensure the F-15s were fully mission ready on landing. This 7046-mile mission required the KC-10As to receive fuel from two KC-135s---two launched from Japan and two launched from Minot AFB, North Dakota. In all, two KC-10As and four KC-135s teamed up to replace 11 KC-135s, one EC-135, and two C-141s. The KC-10A program is on track.

3. KC-135R Modernization Program

a. MISSION: The KC-135 remains the nation's primary strategic aerial refueling tanker. The "Stratotanker" extends the mission duration and "war-fighting" effectiveness of all USAF combat aircraft by providing global inflight refueling during deployment, employment, and redeployment operations. Moreover, the KC-135 is an integral part of the Single Integrated Operational Plan (SIOP) providing mission critical fuel to the strategic bomber force. Inflight refueling enhances combat operations by permitting planning flexibility and increasing combat time and mission range. The KC-135R modernization program provides a significant 50% increase in fuel available for transfer when compared to the basic KC-135A airplane. This increased offload is due largely to the new CFM56 high by-pass turbofan engines added in the KC-135R modernization. In addition to the increased thrust, decreased fuel consumption and decreased noise and air pollution provided by the CFM56 engines, the modernization program updates 25 aircraft systems including the landing gear, electrical system, and the auxiliary power units. This total modernization provides a highly reliable and maintainable aircraft that will continue to meet the nation's refueling requirements well beyond the year 2000.

KC-135R STRATOTANKER

b. STATUS: Through Fiscal Year 1986, we have funded 145 KC-135R modernizations. The first Strategic Air Command unit to complete conversion was at McConnell Air Force Base, Kansas. The conversion was completed with superb results, and the modernized aircraft have performed exactly as planned. We have started conversion of the second unit at Ellsworth Air Force Base, South Dakota. We have already started to reap the benefits of the modernization program. During the operational test program, for example, one KC-135R departed Loring Air Force Base, Maine and flew to Scotland. There, the KC-135R rendezvoused with and air-refueled an E-3A. This fuel permitted the E-3A to continue to the United States while the KC-135R landed in Scotland with several hours of fuel reserves. One KC-135R replaced two KC-135As on this mission. The Fiscal Year 1987 re-engining program will continue production of KC-135R modernization kits.

4. KC-135E Re-engining Program

a. MISSION: As an interim solution to specific Air Reserve Force problems with KC-135A performance, noise, and pollution the KC-135E, also helps to ease the tanker shortfall by providing a 20 percent increase in offload capability. The KC-135E replaces the old J-57 engines of the KC-135A with turbofan JT-3D engines removed from Boeing 707 airliners being retired from service. The "donor" 707 also provides some modification components required for the re-engining.

b. STATUS: Funds for this re-engining program have been added by the Congress over the last several years; 128 Air Reserve Force KC-135A aircraft were funded through Fiscal Year 1985 for retrofit with the 707's JT-3D engines.

D. Special Operations Forces

BACKGROUND

1. Rationale: Special Operations Forces (SOF) must be able to conduct a wide range of missions at all levels of conflict in order to provide the United States with unique options where the use of large conventional forces would be premature, inappropriate, or infeasible. These forces are typically used to resolve crises and to terminate conflicts that are still at relatively low levels. The primary missions for which the Department of Defense maintains a Special Operations Force capability include military/paramilitary training, interdiction raids, personnel recovery, counter-terrorist operations. and, only rarely, covert activities.

Air Force SOF primarily provide airlift and selective firepower support for Army Special Forces, Army Rangers, and Naval Special Warfare Units, and in conjunction with those forces conduct or support collective security, unconventional warfare, direct action/ strike missions, psychological operations (PSYOPS) and contingency missions. Since most SOF missions require secrecy, surprise, and low probability of detection or interception, Air Force SOF assets must be comprised of equipment and personnel specially configured and trained to conduct unusual, short-notice, politically sensitive, low visibility, and difficult to detect operations.

2. Threat: The Soviet Union and its surrogates have both encouraged and supported worldwide revolutions as a way of achieving their objectives without direct confrontation with the Free World. These low intensity conflicts will likely be the most pervasive threat to Free World security for the remainder of this century. US Special Operations Forces provide the capability to respond to this threat and a wide range of crises in a flexible manner.

3. Current Systems: Although most aerospace forces may be used in special operations, the Air Force organizes, trains and equips specific units to conduct special operations as their primary mission. These units are equipped with MC-130, AC-130, EC-130, HH-53, and CH-3 aircraft. We organize,train, and employ these forces to provide flexible, specialized capabilities throughout the spectrum of conflict. Selected C-130 and C-141 airlift forces are also specially trained and equipped to augment the core SOF. Combat rescue forces, equipped with HC-130, UH-60, HH-53, H-3 and H-1 aircraft, also augment the SOF.

4. Future Systems: In order to upgrade the current SOF capability the Air Force is procuring additional MC-130s and AC-130s, and is participating with the US Navy in development of the V-22 (JVX) aircraft in order to acquire the CV-22A version for SOF missions. Twenty-one new MC-130H Combat Talon II aircraft will supplement the current fleet of 14 MC-130E Combat Talon I aircraft to reduce the long-range infiltration/exfiltration/ resupply shortfall. Twelve new AC-130 gunship aircraft will allow replacement of the aging and increasingly difficult to support A-model gunships and will increase the fleet's deployability and survivability. Eighty new CV-22A will provide a long-range exfiltration capability not currently possessed and will complement the MC-130 infiltration and resupply capability.

Fiscal Year 1987 PROGRAMS

5. CV-22A (JVX)

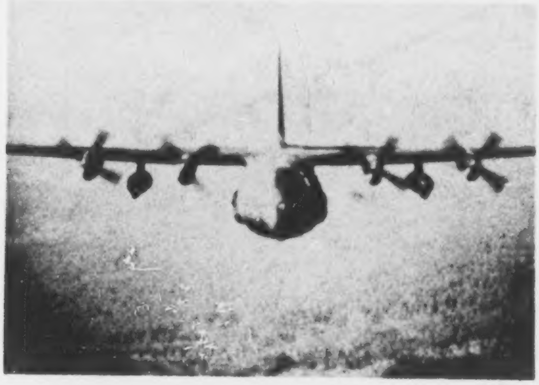
a. MISSION: The CV-22A is the linchpin of Air Force Special Operations Forces (SOF) in the 1990s. It is the key development program for obtaining the long-range capability needed to insert and extract SOF teams. The CV-22A bridges the performance gap between conventional helicopters and fixed wing aircraft by combining medium speed cruise efficiency with vertical takeoff and landing. It replaces the HH-53 and blends with the MC-130H to provide the full spectrum of capability required to perform the worldwide SOF mission.

CV-22A

b. STATUS: The Navy-led V-22 program has nearly completed the preliminary design phase in which the team of Bell Helicopter and Boeing Vertol conducted over 4500 hours of wind tunnel and simulation testing, completed numerous trade studies to identify cost and weight drivers, and developed cost estimates for full scale development scheduled to begin in early Fiscal Year 1986. The Navy is responsible for funding all airframe and engine developments and their mission unique systems. The Air Force is funding SOF mission unique development and its operational test and evaluation. First flight is set for February 1988 and Air Force deliveries start in Fiscal Year 1993 with initial operational capability (six aircraft) scheduled for Fiscal Year 1994.

6. MC-130H

a. MISSION: The Combat Talon II aircraft will be capable of long-range penetration into politically denied/sensitive, defended areas to infiltrate, resupply, or exfiltrate forces or equipment during adverse weather conditions, day or night. It will conduct low profile operations supporting U.S. or allied services unconventional warfare forces throughout the conflict spectrum from low intensity conflict to general war. Combat Talon II will perform a broad range of complementary missions using airdrop or airland of personnel and equipment, aerial refueling to extend range and increase surprise, and terrain following radar to allow terrain masking from enemy threats.



MC-130H COMBAT TALON II

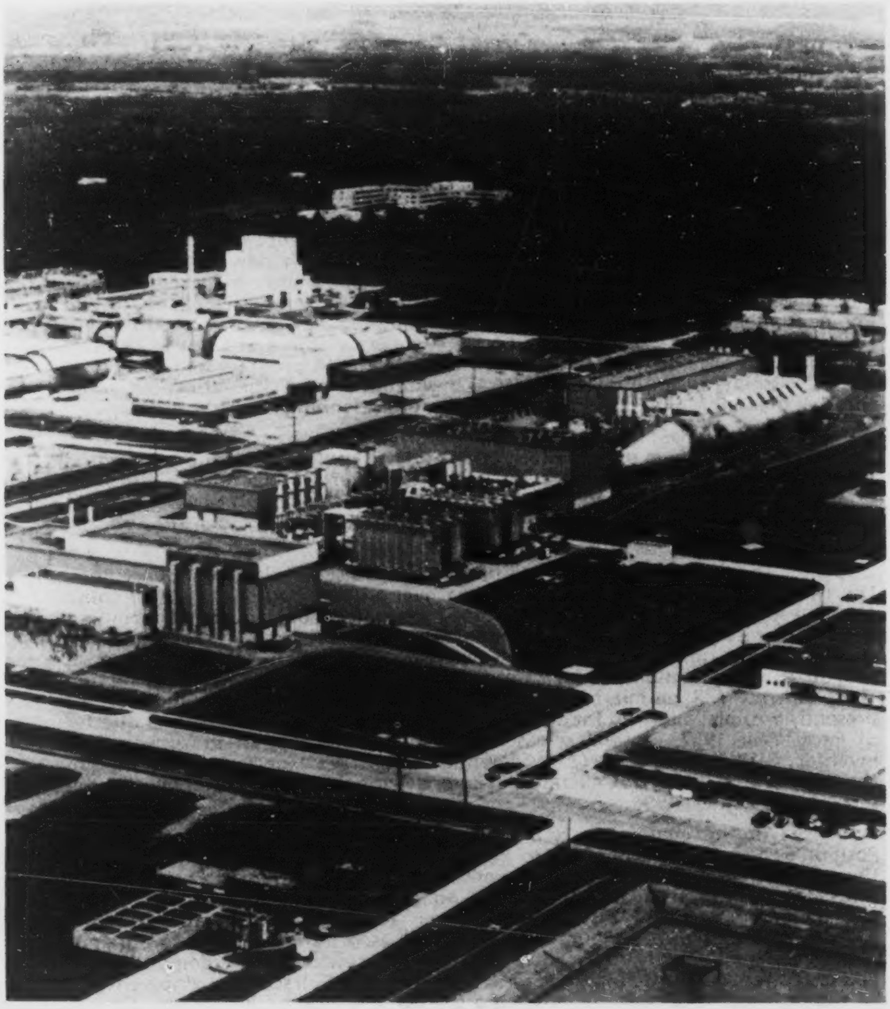
b. **STATUS**: Lockheed is providing C-130H airframes modified with aerial refueling capabability, a high-speed low-level aerial delivery system, explosion and fire suppressed fuel systems, and special lighting equipment. IBM has developed an integrated avionics system to provide terrain following, terrain avoidance radar, precision navigation, secure communications, and electronic counter measures capability. Five aircraft are already on contract funded by Fiscal Year 1982 through Fiscal Year 1985 appropriations. Two aircraft are planned for Fiscal Year 1986. First flight is now scheduled for January 1987, and the initial operational unit will receive the first five aircraft in March 1988 upon completion of the qualification and operational flight test and evaluation.

7. AC-130

a. **MISSION**: The AC-130 gunship provides Special Operations Forces (SOF) with precision fire support and is a long range attack aircraft with extensive loiter time over the target coupled with an immediate capability to detect, identify, record and destroy targets. Although the gunship's primary mission is special operations/unconventional warfare, its unique capabilities permit the AC-130 to perform the conventional roles of close air support, armed reconnaisance and base defense. The gunship's multimission capability was successfully demostrated during the recent Grenada contingency operation where the AC-130 interdicted key enemy communication sites, destroyed enemy antiaircraft gun positions, provided close air support for the invasion force, and performed around the clock surveillance of the battlefield.

AC-130

b. STATUS: The intent of the acquisition program is to allow replacement of the 10 aging and difficult to support AC-130A gunships for 12 new, reliable, and maintainable aircraft. To prepare for a Fiscal Year 1987 new start, the Air Force released a Request For Information (RFI) to industry on October 18, 1985 asking for configuration proposals, cost estimates, and delivery schedules. The Air Force will use the responses to the RFI to draft a Request For Proposal with a target release date of June 1986. The source selection is tentatively scheduled for completion by December 15, 1986 with award of contract before the end of 1986. As in the MC-130H program, the Air Force will procure the C-130 airframes from the Georgia Lockheed Aircraft Corporation and compete the avionics and weapon systems integration. The initial aircraft will be a prototype with testing completed by 1990. Initial deliveries will begin in 1991 with full operational capability in early 1993.



ARNOLD ENGINEERING AND DEVELOPMENT CENTER
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MCMXLVII

X. TEST AND EVALUATION

A. Improved Capability for Development Test and Evaluation

1. **MISSION**: With increased emphasis on testing, there is a need to provide the capability to adequately test and evaluate current and future weapons and support systems. This program acquires and installs new test range and instrumentation systems for developmental test. These improvement and modernization projects are installed at our major test facilities: The Arnold Engineering and Development Center in Tennessee, the Air Force Armament Division in Florida, the Air Force Flight Test Center in California, and the 4950th Test Wing in Ohio. Major new starts include the HAVE LINK program and the Cruise Missile Mission Control Aircraft (CMMCA) programs. All activities are coordinated through the DoD Major Range and Test Facility Base Planning Function.

2. **STATUS**: The HAVE LINK program responds to OSD direction to protect weapon system design information and test data as it is being transmitted from test systems on DoD ranges. In Fiscal Year 1987 we will address the most urgent vulnerabilities and fund the quick fixes having the highest payoffs in terms of operations and communications security. As vulnerabilities are identified we will develop fixes.

The CMMCA will augment the present cruise missile test support fleet. The two CMMCA aircraft when operational will support approximately 80 cruise missile test missions per year. This projected workload is beyond the capability of the present test support fleet. This national resource will support all West Coast and Canadian cruise missile testing. These aircraft will provide telemetry support, mission control functions, radar safety chase, and flight following capabilities. These aircraft will permit testing in instrument meterological conditions, not presently possible, allowing for optimum use of range times. In the second quarter of Fiscal Year 1987, we will release the request for proposal to convert two inventory C-18 aircraft to the CMMCA configuration. We expect contract award in the third quarter. The first aircraft will be operational in Fiscal Year 1989 and the second in Fiscal Year 1990.

Another major activity in Fiscal Year 1987 is the application of Global Position System (GPS) technology to provide Time-Space Positioning Information. Under this Tri-Service effort, we plan to miniaturize and configure GPS receivers and translators to interface with test and training vehicles. When operational at test and training ranges, the system will improve accuracy and coverage of range instrumentation, reduce the number of ground-based tracking sites, and enhance inter-range compatibility. In Fiscal Year 1985 we successfully flew a demonstration pod to test receivers, antennas, and packaging concept. Full scale development will be during Fiscal Year 1986. Following a successful critical design review we will award a contract for production prototype hardware for the Air Force's Gulf Drone Control Upgrade System and the Army's Mobile Automated Field Instrumentation System. In Fiscal Year 1987 and Fiscal Year 1988 we will test the prototype systems. We expect to begin low-rate, initial production during the first quarter of Fiscal Year 1988.

Numerous smaller efforts are also included in this program. All activities are geared toward upgrading data processing, telemetry and test instrumentation systems, and upgrade of our advanced range instrumentation aircraft.

B. Test and Evaluation Support

1. **MISSION**: This program provides the resources for the test support technical functions at Air Force Systems Command (AFSC) test facilities. These facilities are part of the Department of Defense Major Range and Test Facility Base (MRTFB). These facilities support Air Force, other Services, government agencies, and commercial industry. Many capabilities at these facilities do not exist elsewhere. These test facilities are: the Arnold Engineering and Development Center, the Air Force Armament Division, the Air Force Flight Test Center, and the 4950th Test Wing.

2. **STATUS**: The Arnold Engineering and Development Center provides ground environment test support for aeronautical, missile and space programs utilizing wind tunnels, altitude rocket cells, aeroballistic ranges, altitude engine test cells, and space chambers. Programs supported include the F-15, F-16 ATF aircraft, F100/F110 engines, the Strategic Defense Initiative, Peacekeeper, Small ICBM, and the Space Shuttle. The Aeropropulsion Test Facility and the Captive Trajectory Support System will be operational in early Fiscal Year 1986. The Fiscal Year 1987 funds provide the institutional portion for the Center's technical support mission.

The Armament Division (AD) at Eglin Air Force Base, Florida is the prime Air Force organization charged with nonnuclear armament development. AD is the focal point for integrating munitions onto aircraft. This Division conducts and supports weapon effectiveness testing, electronic combat testing, and electronic surveillance and control testing. AD conducts more than 550 test projects per year. One of the more unique facilities is the McKinley Climatic Laboratory at Eglin Air Force Base, Florida. We can perform environmental tests on a complete aircraft. In Fiscal Year 1987, Armament Division's 50 instrumented ranges and 43 aircraft will support nearly 625 different programs.

The Air Force Flight Test Center at Edwards Air Force Base, California conducts and supports development test and evaluation and operational test and evaluation of aircraft and aircraft systems, aerospace research vehicles such as the X-29, cruise missiles and provides support for the Space Shuttle. The flight test center operates several highly instrumented ranges and the USAF Test Pilot School. The center has firm customer forecasts for Fiscal Year 1987 which show continuation of the testing surge that began in Fiscal Year 1984. Programs that will be supported include the B-1B, F-15E, LANTIRN, X-29A, ASAT, and the F-20. We will begin the Short Takeoff and Landing and Maneuvering Technology Program testing activities.

The 4950th Test Wing at Wright-Patterson AFB, Ohio performs flight tests of aircraft and airborne systems and supports space vehicle tracking with the Advanced Range Instrumentation Aircraft. The Test Wing can conduct full scale engineering evaluations, airborne instrumentation, and data reduction. The Test Wing's modification facilities accomplish Class II modifications to AFSC test aircraft. This facility is converting C-18 (used commercial Boeing 707 aircraft) to the EC-18B ARIA configuration. During Fiscal Year 1987, the Test Wing will continue to support DoD and NASA missile and space programs such as the Trident, the Space Shuttle, and Pershing II, and will become involved with programs such as the Mark XV Identification Friend or Foe system, the Advanced Tactical Radar, and the Joint Surveillance and Target Attack Radar System. The tempo is upbeat; the seven aircraft ARIA fleet alone will stage out of 13 overseas bases in support of NASA.

APPENDIX A

TABLE I

DEPARTMENT OF THE AIR FORCE
FISCAL YEAR 1987 AIRCRAFT PROCUREMENT ESTIMATES*

(In Millions of Then Year Dollars)

	FISCAL YEAR ESTIMATES			
	1986		1987	
COMBAT AIRCRAFT	QTY	$	QTY	$
B-1B (MYP)	48	4952.9	-	-
ACM Integration on B-1B	-	96.0	-	-
Air Defense Competition	10	192.0	20	410.9
F-15 E	48†	1888.9	48	1894.3
F-16 C/D (MYP)	180	3006.1	216	3493.9
KC-10A	12	416.4	8	104.4
AC-130A	0	0	-	18.2
MC-130H	2	130.8	5	244.8
Drug Interdiction	1	33.4	-	-
COMBAT SUPPORT AIRCRAFT				
C-5B Airlift Aircraft	16	2048.8	21	1937.4
C-17	-	-	-	217.3
C-20A	8	147.7	-	-
Air Force One (VC-X)	2	280.0	-	34.5
Civil Air Patrol	0	-	38	1.6
TR-1/U-2	6	296.5	3	94.5
MODIFICATION OF IN-SERVICE AIRCRAFT	-	2885.3	-	3101.3
AIRCRAFT SPARES AND REPAIR PARTS	-	3811.1	-	3477.9
AIRCRAFT SUPPORT EQUIPMENT & FACILITIES	-	2844.6	-	4096.4
Common Aerospace Ground Equipment	-	535.5	-	321.4
Other Production Charges	-	2174.0	-	3685.5
Industrial Responsiveness	-	51.9	-	38.4
War Consumables	-	83.2	-	51.1
TOTAL AIR FORCE AIRCRAFT PROCUREMENT	333	23030.5	359	19127.4

* Based on Fiscal Year 1986 DoD Appropriations and Fiscal Year 1987 President's Budget, as of February 5, 1986.

† Includes 40 F-15 C/D Aircraft.

TABLE II

DEPARTMENT OF THE AIR FORCE FISCAL YEAR 1987 MISSILE PROCUREMENT ESTIMATES*

(In Millions of Then Year Dollars)

	FISCAL YEAR			
	1986		1987	
BALLISTIC MISSILES	QTY	$	QTY	$
Peacekeeper	12	1676.0	21	1418.1
Replacement Equipment (Strategic)	-	63.9	-	69.7
OTHER MISSLES				
Air Launch Cruise Missile	-	32.6	-	12.4
AIM-7M (Sparrow)	497	77.9	379	64.9
AIM-9M (Sidewinder)	1650	76.9	1710	95.6
AGM-130	5	19.0	51	26.6
AGM-65D/G (Maverick)	2600	407.9	4700	581.0
AGM-88A (HARM)	1450	414.8	2130	493.4
AIM-120 (AMRAAM)	15	209.0	260	746.5
Ground Launched Cruise Missile	95	515.2	76	133.2
Stinger	-	-	-	1.7
Target Drones	-	34.3	-	19.6
Other Missile Programs	-	666.6	-	810.2
Industrial Facilities	-	20.6	-	14.5
Replacement Equipment	-	13.8	-	17.2
MODIFICATION OF IN-SERVICE MISSILES		155.6		146.5
SPARES AND REPAIR PARTS		441.7		334.2
SPACE AND OTHER SUPPORT				
Spaceborne Equip (COMSEC)	-	34.3	-	61.9
Global Positioning System (MYP)	9	197.4	8	129.7
Space Shuttle Operations	-	240.7	-	59.1
Defense Meteorological Sat Prog	-	41.0	-	19.4
Defense Support Program	-	124.1	-	358.5
Defense Satellite Comm System (MYP)	2	141.1	2	122.7
AF Satellite Communications System	1	32.6	-	-
Space Boosters	-	120.2	1	282.7
Space Defense System	-	-	-	28.5
Special Programs	-	2717.5	-	2896.2
Space Shuttle	-	21.0	-	-
TOTAL AIR FORCE MISSILE PROCUREMENT		8317.0		8982.4

* Based on Fiscal Year 1986 DoD Appropriations and Fiscal Year 1987 President's Budget, as of February 5, 1986.

APPENDIX A

TABLE III

DEPARTMENT OF THE AIR FORCE
FISCAL YEAR 1987 OTHER PROCUREMENT ESTIMATES*

(In Millions of Then Year Dollars)

	FISCAL YEAR	
	1986	1987
MUNITIONS & ASSOCIATED EQUIPMENT	1199.9	1546.2
VEHICULAR EQUIPMENT	304.8	331.8
ELECTRONICS & TELECOMMUNICATIONS EQUIPMENT	2493.9	3183.1
OTHER BASE MAINTENANCE & SUPPPORT EQUIPMENT	4569.5	5839.2
TOTAL AIR FORCE OTHER PROCUREMENT	8568.1	10900.3

* Based on Fiscal Year 1986 DoD Appropriations and Fiscal Year 1987 President's Budget, as of February 5, 1986.

TABLE IV

DEPARTMENT OF THE AIR FORCE
FISCAL YEAR 1987 RESEARCH, DEVELOPMENT TEST AND EVALUATION ESTIMATES*

(In Millions of Then Year Dollars)

	FISCAL YEAR	
	1986	1987
TECHNOLOGY BASE	811.5	848.3
ADVANCED TECHNOLOGY DEVELOPMENT	665.1	784.3
STRATEGIC PROGRAMS	5338.1	7044.3
TACTICAL PROGRAMS	2742.5	3896.8
INTELLIGENCE & COMMUNICATIONS	2243.7	2559.6
DEFENSE WIDE MISSION SUPPORT	1986.4	2119.4
TOTAL RESEARCH, DEVELOPMENT, TEST AND EVALUATION	13787.4	17252.2

* Based on Fiscal Year 1986 DoD Appropriations and Fiscal Year 1987 President's Budget, as of February 5, 1986.

TABLE V

DEPARTMENT OF THE AIR FORCE FISCAL YEAR 1987 RESEARCH, DEVELOPMENT TEST AND EVALUATION ESTIMATES*

(In Millions of Then Year Dollars)

Program Element Number	TITLES	FISCAL YEAR 1986	FISCAL YEAR 1987
	TECHNOLOGY BASE		
61101F	In-House Laboratory Independent Research	16.0	17.5
61102F	Defense Research Sciences	206.1	212.6
61103F	University Research Initiative	6.3	12.5
62101F	Geophysics	39.4	40.6
62102F	Materials	53.2	57.5
62201F	Aerospace Flight Dynamics	68.7	70.3
62202F	Aerospace Biotechnology	48.1	53.4
62203F	Aerospace Propulsion	63.3	65.6
62204F	Aerospace Avionics/VHSIC	71.2	67.8
62205F	Training/Simulation Technololgy	25.4	26.8
62206F	Civil & Engineering Environment QA	9.2	5.4
62302F	Rocket Propulsion	40.1	41.9
62601F	Advanced Weapons	36.2	37.1
62602F	Conventional Munitions	41.2	49.9
62702F	Command, Control, Communications	78.3	79.7
62703F	Personnel Utilization Technology	8.6	9.8
	ADVANCED TECHNOLOGY DEVELOPMENT		
63106F	Logistics R&D Requirements	9.5	19.1
63109F	Integrated EW SystemAdvanced Development	43.9	60.1
63202F	Aircraft Propulsion Subsystem Integration	26.7	30.2
63203F	Advanced Avionics for Aircraft	21.0	49.8
63205F	Flight Vehicle Technology	19.4	27.6
63208F	Recon Sensors/Processing Technology	5.8	6.1
63211F	Aerospace Structures and Materials	18.1	31.5
63215F	Aviation Turbine Fuel Technology	8.0	10.4
63216F	Adv Turbine Engine Gas Generator	26.9	27.8
63217F	Weapon System Power	1.2	3.5
63226F	DOD Common Prog Language (ADA)	7.3	6.9
63227F	Advanced Simulator Technology	4.3	5.1
63231F	Crew Systems Technology	11.2	15.9
63244F	Aircraft Non-nuclear Survivability	3.2	2.5
63245F	Advanced Fighter Technology Integration	19.2	30.7
63250F	Lincoln Laboratory	23.0	26.5
63253F	Advanced Systems Integration Demonstration	0.0	9.4
63259F	Cartog Applications-Tac & Strat System	1.4	1.7
63269F	National Aerospace Plane Technology	0.0	33.5

* Based on Fiscal Year 1986 DoD Appropriations and Fiscal Year 1987 President's Budget, as of February 5, 1986.

APPENDIX B

Program Element Number	TITLES	FISCAL YEAR 1986	FISCAL YEAR 1987
63302F	Space and Rocket Propulsion	3.3	12.9
63363F	Hypervelocity Missile	10.5	9.6
63401F	Advanced Spacecraft Technology	6.8	14.4
63410F	Space Sys Environ Interactions Technology	3.9	8.5
63424F	Curise Missile Surveillance Technology	11.3	16.9
63452F	Very High Speed Integrated Circuits	202.0	132.9
63601F	Conventional Weapons	24.9	30.9
63605F	Advanced Radiation Technology	23.4	23.6
63704F	Manpower and Personnel Sys Technology	2.1	2.4
63707F	Weather Systems	3.4	3.7
63723F	Civil/Environmental Engineering Technology	13.7	13.7
63726F	Fiber Optics Development	3.4	2.8
63727F	Advanced Communications Technology	4.8	1.9
63728F	Advanced Computer Technology	7.3	10.5
63743F	Electro-Optical Warfare	13.9	53.4
63745F	Chemical Warfare Defense	4.9	5.1
63750F	Counter/Countermeasures-Advanced Develop	13.1	7.6
63751F	Training Systems Technology	2.3	2.4
63752F	DOD Software Engineering Institute	11.4	9.5
63789F	C^3 Advanced Development	15.9	23.0

STRATEGIC PROGRAMS

Program Element Number	TITLES	FISCAL YEAR 1986	FISCAL YEAR 1987
11142F	KC-135 Squadrons	0.9	3.9
11213F	Minuteman Squadrons	5.5	67.5
11312F	PACCS and WWABNCP System EC-135	4.0	14.8
11316F	SAC Communications	7.4	0.6
12310F	NCMC-TW/AA Systems	51.1	32.9
12311F	NCMC-Space Defense Systems	56.5	41.3
12313F	Ballistic Msl Tac Warning/Atk Assess Sys	2.1	3.1
12325F	Joint Surveillance System	2.0	3.5
12411F	Surveill Radar Stations/Sites	19.7	25.0
12412F	DEW Radar Stations	39.9	14.4
12417F	Over-the-Horizon Radar	65.7	33.9
12423F	Ballistic Missile Early Warning System	12.6	16.2
12424F	Spacetrack	9.4	16.5
12431F	Defense Support Program	77.5	138.2
12432F	SLBM Radar Warning Systems	8.0	19.8
12433F	Integ Operational Nudets Detect System	20.0	31.3
12436F	C^2 Process/Display System	14.4	27.0
33131F	Minimum Essential Emergency Comm Network	99.5	92.5
33152F	WWMCCS Information System	4.9	8.5
33154F	WWMCCS Information System-JPMO	62.1	111.4
33601F	Milstar Satellite Comm. System (AF Terminals)	124.3	298.5
33603F	Milstar Communications Satellite System	336.9	493.4
41123F	Military Airlift Group (IF)	19.5	9.0
63311F	Advanced Strategic Missile Systems	159.8	176.9
63364F	Short-Range Attack Missile II	34.1	164.7
63367F	Strategic Relocatable Target Capability	0.0	1.0
63368F	Air Defense Battle Management Technology	0.0	2.5

Program Element Number	TITLES	FISCAL YEAR	
		1986	1987
63369F	Cruise Missile Engagement System Technology	0.0	2.1
63716F	Atmospheric Surveillance Technology	4.9	32.0
63735F	WWMCCS Architecture	7.8	2.2
64226F	B-1B	271.6	218.7
64234F	Common Strategic Rotary Launcher	70.8	14.6
64312F	ICBM Modernization	1442.3	2116.8
64326F	Strat Conventional Standoff Capability	35.1	7.5
64361F	Air Launched Cruise Missile	10.9	6.1
64406F	Space Defense System	199.5	278.0
64711F	Systems Survivability (Nuclear Effects)	7.7	13.5
	TACTICAL PROGRAMS		
27129F	F-111 Squadrons	47.3	35.2
27130F	F-15 Squadrons	230.0	209.0
27133F	F-16 Squadrons	66.3	81.3
27136F	F-4G Wild Weasel Squadrons	35.7	38.7
27162F	Tactical AGM Missiles	1.9	2.4
27215F	TR-1 Squadrons	0.0	23.5
27217F	Follow-on Tac Recce Systems	0.0	30.6
27247F	Air Force TENCAP	0.2	0.1
27411F	Overseas Air Weapon Control System	3.0	8.5
27412F	Tactical Air Control System	14.6	19.3
27417F	Airborne Warning and Control System	118.8	137.2
27423F	Advanced Communication Systems	100.8	33.3
27431F	Tac Air Intelligence System Activities	2.1	0.5
27435F	Tac Reconnaissance Imagery Exploitation	7.5	0.8
27595F	Base Comm-Tac Air Forces	0.9	3.2
28010F	Jt Tactical Comm Program (TRI-TAC)	4.8	11.4
33605F	Satellite Communications Terminals	4.8	4.6
35887F	Electromagnetic Combat Intelligence Support	1.6	1.8
41840F	MAC Command/Control System	7.7	22.7
44011F	Special Operations Forces	9.7	66.5
52610F	A-7 Squardons (ANG)	0.0	4.5
63230F	Advanced Tactical Fighter (ATF)	164.6	294.1
63239F	Unmanned Air Reconnaissance Vehicle	9.7	3.9
63256F	Jt Service Adv Vert Lift Actf (CV-22A)	2.4	4.9
63307F	Airbase Survivability and Recovery	4.9	7.1
63320F	Low Cost Seeker	17.1	14.8
63609F	Millimeter Wave Seekers	18.6	14.2
63714F	DOD Physical Security Eq-Exterior	1.0	1.0
63717F	Technical On-Site Inspection (TOSI)	0.0	9.9
63742F	Combat Identification Technology	8.5	6.3
63749F	C3CM Advanced Systems	1.9	4.5
64201F	Acft Avionics Equipment Development	28.4	25.1
64212F	Acft Equip Development	8.5	4.9
64218F	Engine Model Derivative Program	60.6	68.1
64219F	Integrated Digital Avionics	8.0	13.4
74220F	EW Counter Response	29.2	34.1

APPENDIX B

Program Element Number	TITLES	FISCAL YEAR	
		1986	1987
64222F	Nuclear Weapons Support	2.0	4.3
64223F	Alternate Fighter Engine	32.5	109.4
64231F	C-17 Program	372.8	612.3
64236F	Infrared Search and Track System	23.1	34.8
64247F	Modular Automatic Test Equipment	9.7	23.7
64249F	Night Precision Attack	39.8	40.1
64268F	Acft Engine Component Improvement Program	121.7	141.8
64313F	Next Generation Trainer	52.8	10.8
64314F	Adv Med Range Air-to-Air Missile	101.3	39.1
64315F	Advanced Short-Range Air-to-Air Missile	0.0	0.4
64321F	Joint Tactical Fusion Program	23.7	24.7
64327F	Hardened Target Munitions	0.0	15.1
64362F	Ground Launched Cruise Missile	0.7	7.4
64601F	Chemical/Biological Defense Equipment	21.9	27.2
64602F	Armament Ordance Development	17.1	29.8
64604F	Submunitions Development	37.9	4.9
64607F	Wide-Area Anti-Armor Munition	12.2	15.1
64617F	Air Base Survivability and Recovery	19.4	21.3
64703F	Aeromedical Systems Development	7.8	9.3
64706F	Life Support System	15.3	12.4
64708F	Other Operational Equipment	17.5	14.5
64710F	Reconnaissance Equipment	7.6	9.5
64715F	DOD Physical Security Eq-Exterior	15.3	18.5
64724F	Tac C^3 Countermeasures	29.7	24.6
64725F	Combat Identification Systems	12.8	12.0
64733F	Surface Defense Suppression	29.2	44.1
64737F	Airborne Self-Protection Jammer	5.0	10.1
64738F	Protective Systems	50.1	92.7
64739F	Tactical Protective System	43.8	94.9
64740F	Computer Resources Management Technology	11.7	13.0
64742F	Precision Location Strike System	61.5	26.6
64750F	Intelligence Equipment	13.1	10.4
64756F	Side Looking Airborne Radar (SLAR)	23.4	19.7
64770F	Joint STARS	0.0	355.7
64779F	Jt Interoperability Tactical C^2 System	8.9	9.9

INTELLIGENCE AND COMMUNICATIONS

32053F	NMCS-Wide Support-Communications	0.0	2.0
33110F	Defense Satellite Communication System	6.8	14.0
33126F	Long Haul Communications (DCS)	11.2	5.6
33128F	Interservice Agency Auto Msg Proc Exchange	30.6	54.6
33144F	Electromagnetic Compatibility Anal Center	7.3	7.7
35114F	Traffic Cntrl/Approach/Landing System	23.9	18.6
35164F	NAVSTAR GPS (User Eq)	28.0	45.0
35165F	NAVSTAR GPS (Space/Grnd Segment)	44.4	44.4
63260F	Intelligence Advance Development	0.0	6.1
63431F	Space Communications	41.9	35.8
84733F	General Intelligence Skill Training	5.2	4.8

Program Element Number	TITLES	FISCAL YEAR	
		1986	1987
	DEFENSE WIDE MISSION SUPPORT		
35110F	Satellite Control Facility	71.3	91.7
35119F	Space Boosters	215.9	138.7
35130F	Consolidated Space Operations Center	85.2	93.7
35160F	Def Meteorological Satellite Program	54.9	63.8
35171F	Space Shuttle Operations	75.4	175.9
63248F	Concept Development	2.0	3.2
63402F	Space Test Program	66.7	73.7
63438F	Satellite Systems Survivability	4.2	5.4
63790F	NATO Cooperative Research and Development	25.0	49.2
64211F	Adv Aerial Target Development	13.1	11.1
64227F	Flight Simulator Development	128.4	102.7
64237F	Vrbl Stab In-Flt Sim Test Acft (VISTA)	0.4	8.7
64609F	R&M Maturation/Technology Insertion	6.6	18.0
64707F	Weather Systems	7.9	8.4
64735F	Range Improvement	52.6	64.6
64747F	Electromagnetic Radiation Test Facility	3.3	5.7
64755F	Improved Capability for RDT&E	45.2	89.5
65101F	Project Air Force	18.2	18.3
65304F	Acquisition/Command Support - TELECOM	6.6	11.0
65306F	Ranch Hand II Epidemiology Study	4.7	7.4
65708F	Nav/Radar/Sled Track Test Support	20.7	25.9
65806F	Acquisition and Command Support	356.5	285.1
65807F	Test and Evaluation Support	426.7	304.2
65808F	Advanced Systems Engineering/Plan	17.0	23.1
65863F	RDT&E Aircraft Support	55.5	62.4
65872F	Productivity Improvement	2.9	5.1
65874F	Product Performance Agmt Cntr (PPAC)	0.0	1.2
65894F	Real Property Maintenance-RDT&E	0.0	140.3
65896F	Base Operations (RDT&E)	0.0	110.3
71112F	Inventory Control Point Operations	2.9	4.8
72207F	Depot Maintenance (IF)	0.0	0.5
78011F	Industrial Preparedness	62.9	83.6
78026F	Product/Reliable/Avail/Maintain Program	14.0	31.4
A1004F	International Activities	3.0	2.7

GLOSSARY

AACE	Aircraft Alerting Communications Electromagnetic Pulse
AASM	Advanced Air-to-Surface Missile
ACM	Advanced Cruise Missile
ADP	Automated Data ProcessingAFB
AFB	Air Force Base
AFE	Alternate Fighter Engine
AFEWES	Air Force Electronic Warfare Evaluation Simulator
AFMAG	Air Force Management Analysis Group
AFSARC	Air Force Systems Acquisition Review Council
AFSATCOM	Air Force Satellite Communications
AFSF	Air Force Stock Fund
AFTI	Advanced Fighter Technology Integration
AIRS	Advanced Intertial Reference Sphere
ALCM	Air Launched Cruise Missile
AMRAAM	Advanced Medium Range Air-to-Air Missile
AMST	Advanced Military Spaceflight Technology
AN/MPN-XX	Rapidly Deployable Air Traffic Control System
ASARS	Advanced Synthetic Aperture Airborne Radar Systems
ASAS	All Source Analysis System
ASAT	Antisatellite
ASMS	Advanced Strategic Missile System
ASPJ	Airborne Self-Protection Jammer
ASRAAM	Advanced Short-Range Air-to-Air Missile
ATARS	Advanced Tactical Air Reconnaissance System
ATB	Advanced Technology Bomber
ATF	Advanced Tactical Fighter
AWACS	Airborne Warning and Control System
AWS	Advanced Warning System
BLSS	Base Level Self-Sufficiency Spares
BMD	Ballistic Missile Defense
BMEWS	Ballistic Missile Early Warning System
BKEP	Boosted Kinetic Energy Penetrator
C^2	Automated Command and Control
C^3	Command, Control and Communications
CADIN	Continental Air Defense Integration North
CEM	Combined Effects Munition
CMD	Countermeasures Dispenser
CONUS	Continental United States
CRAF	Civil Reserve Air Fleet
CSD	Critical Subsystems Development
CSOC	Consolidated Space Operations Center
CSRL	Common Strategic Rotary Launcher
DAACM	Direct Airfield Attack Combined Munition
DCS	Defense Communications System (Long Haul Communications)
DEW	Distant Early Warning
DMSP	Defense Meteorological Satellite Program
DOD	Department of Defense

DSCS	Defense Satellite Communications System
DSP	Defense Support Program
DSARC	Defense System Acquisition Review Council
DT&E	Development, Test and Evaluation
ECCM	Electronic Counter-Countermeasures
ECM	Electronic Countermeasures
EHF	Extremely High Frequency
EJS	Enhanced JTIDS System
ELINT	Electronic Intelligence
ELV	Expendable Launch Vehicle
EMDP	Engine Model Derivative Program
EMP	Electromagnetic Pulse
ENSUE	Enemy Situation Correlation Element
FAA	Federal Aviation Administration
FLIR	Forward Looking Infrared
FRG	Federal Republic of Germany
FSD	Full Scale Development
FWETE	Foreign Weapons, Equipment and Technology Evaluation
GEODSS	Ground-based Electro-Optical Deep Space Surveillance
GLCM	Ground Launched Cruise Missile
GPS	Global Positioning System
GWEN	Ground Wave Emergency Network
HARM	High Speed Anti-Radiation Missile
HF	High Frequency
ICBM	Intercontinental Ballistic Missile
IIR	Imaging Infrared
IMIP	Industrial Modernization Incentive Program
IOC	Initial Operational Capability
IONDS	Integrated Operational Nuclear Detonation Detection System
IOT&E	Initial Operational Test and Evaluation
IPB	Industrial Base Program
IUS	Inertial Upper Stage
JAFE	Joint Advanced Fighter Engine
Joint STARS	Joint Surveillance and Target Attack Radar System
JSC	Johnson Space Center
JTACMS	Joint Tactical Missile System
JTFP	Joint Tactical Fusion Program
JTIDS	Joint Tactical Information Distribution System
JVX	Joint Service Vertical Lift Aircraft Development Program
LANTIRN	Low Altitude Navigation and Targeting Infrared System for Night
LF	Low Frequency
LLLGB	Low Level Laser Guided Bomb
MAC	Military Airlift Command
MANTECH	Manufacturing Technology

MCE	Modular Control Equipment
MEECN	Minimum Essential Emergency Communications Network
MIL-STD	Military Standard
MLS	Microwave Landing Systems
MRT	Miniature Receive Terminal
MSE	Manned Spacecraft Engineer
MST	Missile Surveillance Technology
MTBF	Mean Time Between Failure
NASA	National Aeronautics and Space Administration
NATO	North Atlantic Treaty Organization
NCA	National Command Authority
NDS	Nuclear Detonation Detection System
NGT	Next Generation Trainer
NORAD	North American Aerospace Defense
NUDET	Nuclear Detonation
NWS	North Warning System
O&M	Operations and Maintenance
OFT	Operational Flight Trainer
OMG	Operational Maneuver Group
OSD	Office of Secretary of Defense
OTH-B	Over-the-Horizon-Backscatter
OWRM	Other War Reserve Materiel
PACBAR	Pacific Barrier Radar
PAM-D II	Payload Assist Modules-Delta Class II
PARCS	Perimeter Acquisition Radar Characterization System
PAVE PAWS	SLBM Radar Warning System
PBA	Production Base Analysis
PE	Program Element
PLSS	Precision Location Strike System
PIAS	PLSS Intelligence Augmentation System
POS	Peacetime Operating Stock
PPAC	Product Performance Agreement Center
PRAM	Productivity, Reliability, Availability, Maintainability
QSAS	Quick Start Auxiliary Power Unit
QT&E	Qualification Test and Evaluation
QOT&E	Qualification Operational Test and Evaluation
R&D	Research and Development
RDT&E	Research, Development, Test and Evaluation
RF	Radio Frequency
RFP	Request For Proposal
R&M	Reliability and Maintainability
SAC	Strategic Air Command
SACDIN	Strategic Air Command Digital Network
SBSS	Space Based Space Surveillance
SCF	Satellite Control Facility
SCSC	Strategic Conventional Standoff Capability
SDI	Strategic Defense Initiative
SDIO	Strategic Defense Initiative Organization

SDS	Satellite Data System
SHF	Super High Frequency
SINCGARS	Single Channel Ground and Airborne Radio System
SLAR	Side Looking Airborne Radar
SLBM	Submarine-Launched Ballistic Missile
SOF	Special Operations Forces
SRAM II	Short Range Attack Missile II
STC	Satellite Test Center
STP	Space Test Program
STS	Space Transportation System
TAC	Tactical Air Command
TACS	Tactical Air Control System
TACMS	Tactical Missile System
TARS	Tactical Air Reconnaissance System
TDMA	Time Division Multiple Access
TDRS	Tracking Data Relay Satellite
TEWS	Tactical Electronic Warfare System
TMD	Tactical Munitions Dispenser
TOA	Total Obligation Authority
TRACALS	Traffic Control and Landing System
TRI-TAC	Joint Tactical Communications
UARS	Unmanned Air Reconnaissance System
UHF	Ultra High Frequency
VHF	Very High Frequency
VHSIC	Very High Speed Integrated Circuits
VISTA	Variable Stability In-Flight Simulator Test Aircraft
VLF	Very Low Frequency
WAAM	Wide Area Antiarmor Munitions
WIS	WWMCCS Information System
WRM	War Reserve Materiel
WRSK	War Readiness Spares Kits
WWMCCS	Worldwide Military Command and Control System

THURSDAY, MARCH 13, 1986.

AIR FORCE MISSILE AND OTHER PROCUREMENT

WITNESSES

HON. THOMAS E. COOPER, ASSISTANT SECRETARY OF THE AIR FORCE, RESEARCH, DEVELOPMENT AND LOGISTICS

LT. GEN. BERNARD P. RANDOLPH, USAF, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT AND ACQUISITION

MAJOR GENERAL CHARLES P. SKIPTON, USAF, DIRECTOR LOGISTICS PLANS AND PROGRAMS

BRIG. GEN. THOMAS R. FERGUSON, JR., USAF, DEPUTY FOR AMRAAM, ARMAMENT DIVISION, AIR FORCE SYSTEMS COMMAND

INTRODUCTION

Mr. CHAPPELL. The meeting will please come to order.

Mr. MURTHA. I move that those portions of the hearing today, March 13, 1986, and those portions of the hearings scheduled for March 18, March 19, March 20, March 24 and March 25, which involve classified material, be held in executive session because of the classification of the material to be discussed.

In addition, I move that the transcripts and related materials developed in the intelligence hearing be handled in accordance with the Appropriations Committee's special interim procedures of protection of intelligence information.

Mr. CHAPPELL. If there is no discussion, the clerk will call the roll.

[The clerk proceeded to call the roll.]

Mr. CHAPPELL. Madam Reporter, let the record show that on this vote Mr. Chappell, Mr. Murtha, Mr. Dicks, Mr. Hefner, Mr. Young, Mr. Miller, and Mr. Livingston voted aye.

Seven Members having voted in the affirmative, this hearing is now closed.

Mr. CHAPPELL. This morning, the committee will receive testimony on the fiscal year 1987 requests for funds for Air Force Missile Procurement, and Air Force Other Procurement.

The missile procurement appropriation funds all Air Force strategic and tactical missiles, and satellites and space equipment.

The other procurement appropriation funds munitions, vehicles, electronics and telecommunications equipment, and other support equipment.

The fiscal year 1987 requests for these two appropriations are $9.0 billion and $10.9 billion, respectively.

The principal witnesses are the Honorable Thomas E. Cooper, Assistant Secretary of the Air Force for Research, Devlopment and Logistics; and Lieutenant General Bernard P. Randolph, Deputy Chief of Staff for Research, Development and Acquisition.

We understand that you have some brief opening remarks. Please proceed. We are happy to have you back with us.

MISSILE AND OTHER PROCUREMENT OVERVIEW

Dr. Cooper. Thank you, Mr. Chairman.

I would also like to introduce two of the other witnesses that are with us today, Major General Charles P. Skipton, our logistician. This is his first appearance before the committee, and also Brigadier General Tom Ferguson, our Program Manager for AMRAAM.

With your concurrence, we would like to have General Randolph give you a very brief overview of the missile procurement account, to be followed at the committee's request by an overview from General Skipton, and then I would like to yield whatever time I might have to General Ferguson to give you a short presentation on the AMRAAM program.

We can do all of that in a relatively short period of time.

Mr. Hefner (presiding). Please proceed, General.

Summary Statement of General Randolph

General Randolph. (Slide 1.) What I would like to do is to step very smartly into the missile procurement area. (Slide 2.) I would like to remind the committee of the Air Force's budget request of $104.5 billion, of which approximately 55 percent of that is in the area of what we generally call investment.

Of that number, in the actual procurement accounts on the next chart, you see the procurement accounts that this committee is specifically interested in discussing.

(Slide 3.) Yesterday, we talked about the aircraft procurement. Today, we will be concentrating on the missile and other procurement.

My portion of the briefing will discuss the missile procurement area, and then as has already been noted, General Skipton will discuss other procurement.

(Slide 4.) Of course, in the missile procurement area, that covers ballistic missiles, tactical missiles, and the space programs, and I will discuss very briefly all three of those.

TACTICAL MISSILES

(Slide 5.) As has already been noted, General Ferguson will talk a little bit about the Advanced Medium-Range Air-to-Air Missile. I am prepared to discuss and answer questions on any of those that you see in the chart.

With regard to the Maverick program, it is going along quite smoothly. We have had about a ——— success rate, we have hit ——— of the targets we have fired at over the last two years. We have conducted testing, and we are ready to go into full-rate production with that missile.

The HARM missile is proceeding along quite well, and we have had ——— with our missile since last year and we are ready to move forward.

The GLCM is proceeding quite well, and is deployed currently in Europe.

The Sidewinder and Sparrow missiles are air-to-air missiles, supporting overall Air Force requirements.

The AGM-130, powered form of the GBU-15, will go into production for the first time in fiscal year 1987, so that will begin production.

Although the number on target drones is not shown, there are 72 target drones we would be procuring with this account.

SPACE PROGRAM

(Slide 6.) With regard to the space program, I will talk briefly about those. The special programs are classified, and they are covered elsewhere.

(Slide 7.) In the area of space programs, I would like to call to your attention for the first time, we will be requesting a multiyear procurement for the Defense Support Program.

If you recall, the Defense Support Program is ——— part of our primary system. Our request is to buy five satellites for the price of four, with a savings of about $330 million, if we are given the permission to press with the multiyear procurement.

In the area of space boosters, with the shuttle tragedy, we are in the process now of trying to determine a recovery plan for the Department of Defense, and that is proceeding along quite smartly, and in fact, we will probably be making some request to the Congress in the future.

The NAVSTAR GPS program is continuing quite well, as are the Defense Satellite Communications System and shuttle operations, and the anti-satellite program is requesting money to begin some production in that area.

BALLISTIC MISSILES

(Slide 8.) Finally, in the missile area, we have 21 Peacekeeper missiles that we are asking for. Those are all test missiles, not part of the deployed inventory, and if you recall, the Congress asked us to propose the most economical procurement rate, somewhere between 12 and 21.

Twenty-one missiles can be provided at a 25 percent less unit cost than 12, and thus we propose 21.

The remainder is ground support equipment associated with that program. That completes my brief overview in the missile procurement area.

[CLERK'S NOTE.—The slides used by Dr. Cooper during his presentation follow:]

The joint statement on the Fiscal Year 1987 Budget Estimates, Aircraft Procurement, Missile Procurement, and Research, Development, Test, and Evaluation by Dr. Cooper and General Randolph was printed as part of the hearing on Aircraft Procurement, Air Force. (See page 146.)

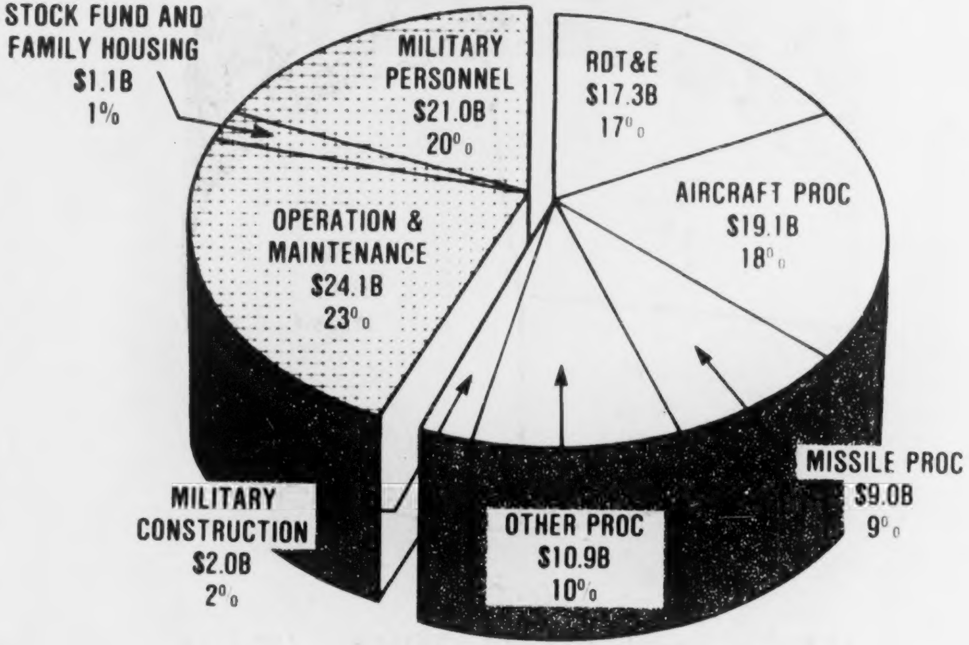
FISCAL YEAR 1987 BUDGET REQUEST (PROCUREMENT)

Lt General BERNARD P. RANDOLPH

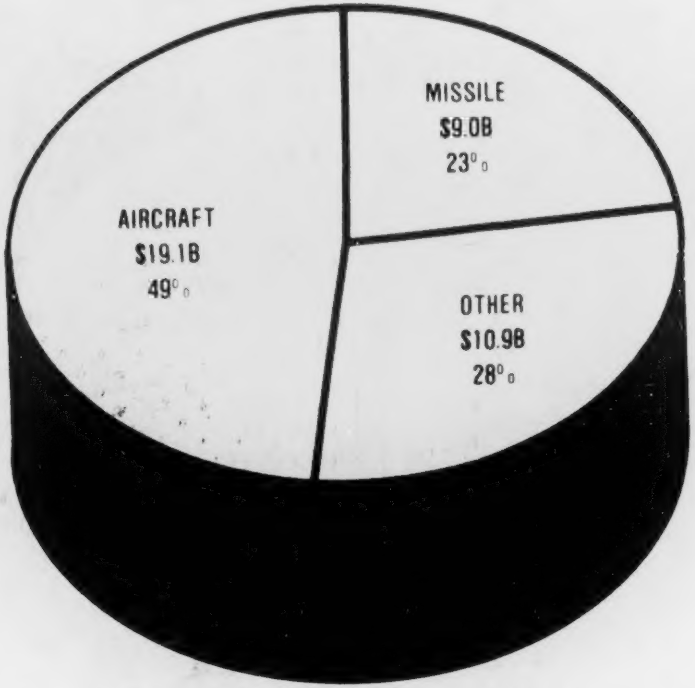
DCS/Research, Development & Acquisition
Headquarters United States Air Force

USAF FISCAL YEAR 1987 BUDGET REQUEST BY APPROPRIATION

TOTAL: $104.5B

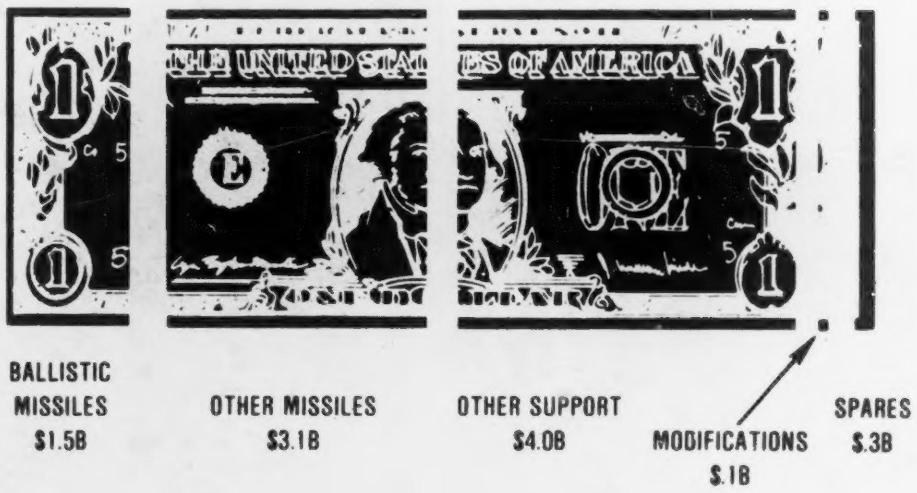


FY 1987 AIR FORCE PROCUREMENT REQUEST
$39.0B

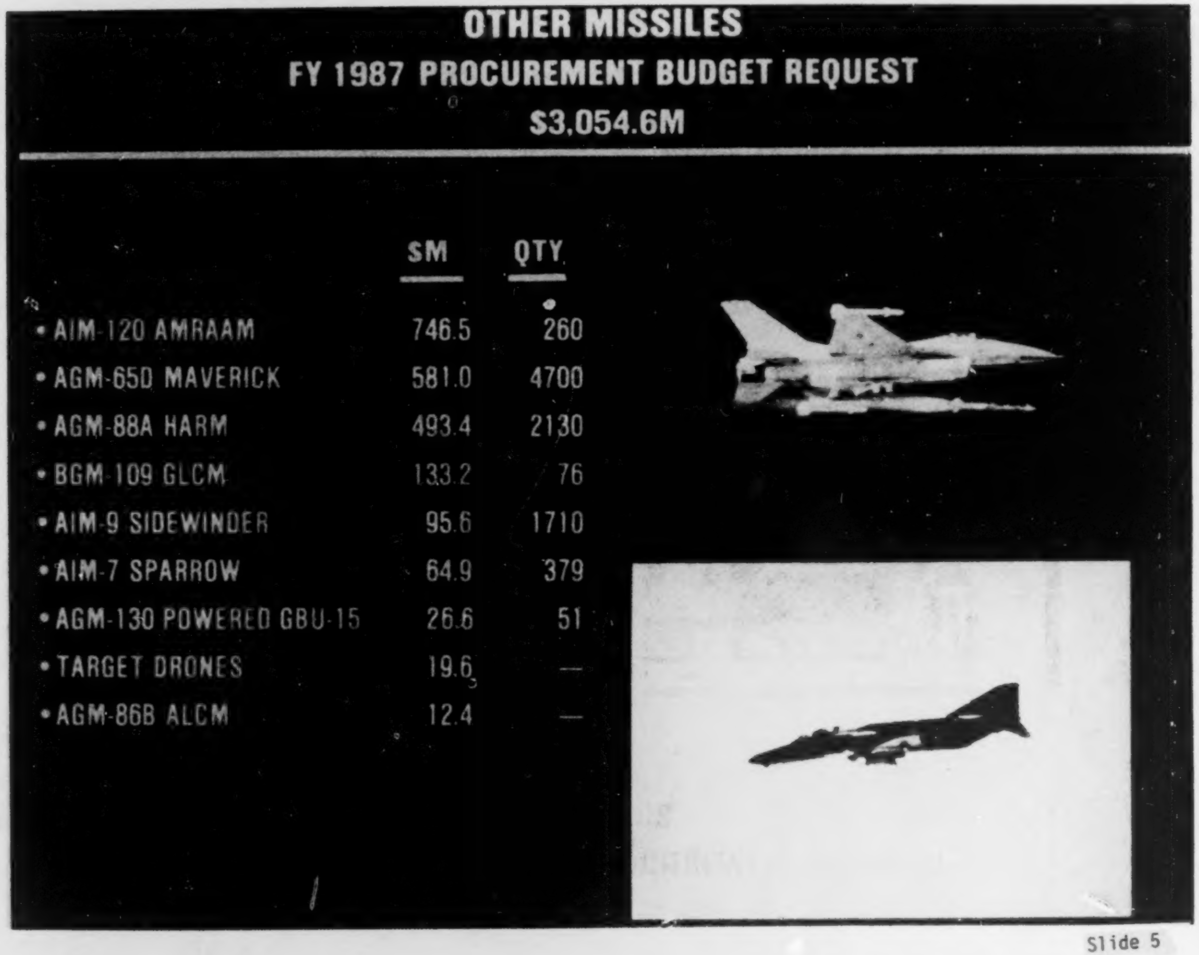


FY 1987 MISSILE PROCUREMENT REQUEST

$9.0B



Slide 4



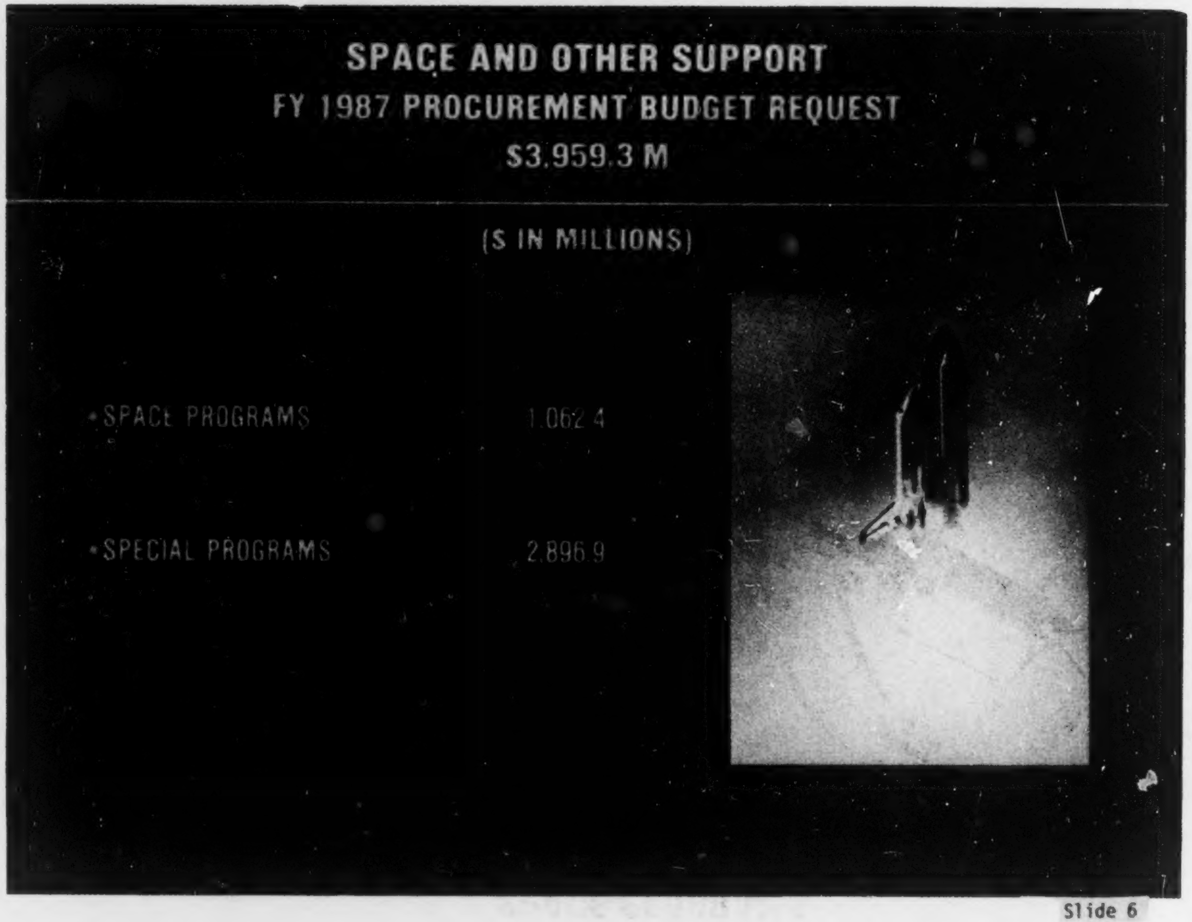
OTHER MISSILES

FY 1987 PROCUREMENT BUDGET REQUEST

$3,054.6M

	$M	QTY
• AIM-120 AMRAAM	746.5	260
• AGM-65D MAVERICK	581.0	4700
• AGM-88A HARM	493.4	2130
• BGM-109 GLCM	133.2	76
• AIM-9 SIDEWINDER	95.6	1710
• AIM-7 SPARROW	64.9	379
• AGM-130 POWERED GBU-15	26.6	51
• TARGET DRONES	19.6	—
• AGM-86B ALCM	12.4	—

Slide 5



SPACE AND OTHER SUPPORT

FY 1987 PROCUREMENT BUDGET REQUEST

$3,959.3 M

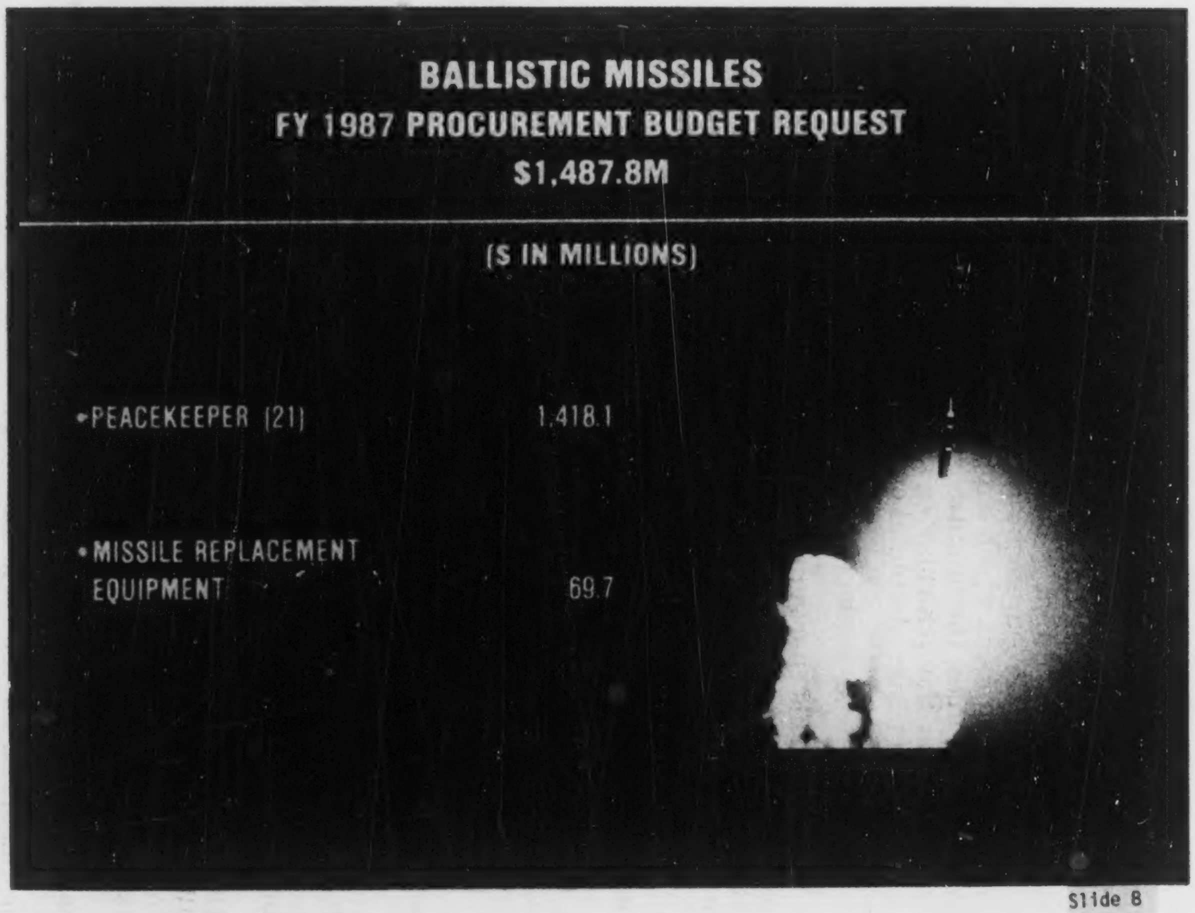
($ IN MILLIONS)

• SPACE PROGRAMS	1,062.4
• SPECIAL PROGRAMS	2,896.9

Slide 6

SPACE PROGRAMS
FY 1987 PROCUREMENT BUDGET REQUEST

	($ IN MILLIONS)
• DEFENSE SUPPORT PROGRAM (MYP)	499.8
• SPACE BOOSTERS	282.7
• NAVSTAR GPS (MYP)	220.8
• DSCS (MYP)	122.7
• SPACE SHUTTLE OPS	66.7
• SPACEBORNE EQUIP (COMSEC)	61.9
• ASAT	30.5
• DMSP	25.7



BALLISTIC MISSILES

FY 1987 PROCUREMENT BUDGET REQUEST

$1,487.8M

($ IN MILLIONS)

• PEACEKEEPER (21)	1,418.1
• MISSILE REPLACEMENT EQUIPMENT	69.7

Slide 8

SUMMARY STATEMENT OF GENERAL SKIPTON

General **RANDOLPH**. I will now turn it over to General Skipton in the Other Procurement area.

General **SKIPTON**. Thank you, gentlemen.

(Slide 9.) The term "other" would infer that other is something you don't need, and that is not the case. This chart describes what is in the Other Procurement account, base maintenance support, electronics equipment which support the command and control activity of our forces, the munitions that provide the striking edge of our force, and the vehicular equipment which controls movement of people and material around our bases.

OTHER PROCUREMENT ACCOUNT

(Slide 10.) This chart graphically portrays what is included in the Other Procurement account. I have pictures of examples here: the GBU-15 bomb in the munitions area which has a large procurement in fiscal year 1987; a modular ambulance in the vehicle area; OTH-B radar in communications and electronic equipment; and in the Other Base Maintenance area, we are putting emphasis on the medical, dental war reserve material.

(Slide 11.) This chart depicts a breakout of account.

Two things: One, the relative share of the Other Procurement equipment hasn't changed over time. The classified portion of the account ——— accounts for about 39 percent of the program. If you add all the intelligence from the Communications Electronics and Other Base, plus the ——— this accounts for ——— percent of the total Other Procurement request.

(Slide 12.) This chart depicts the growth in the account. We had a relatively stable period of low support after the Vietnam conflict, followed by a recognition by the Air Force and OSD of the need to modernize the command and control systems of the Air Force and improve readiness and sustainability.

(Slide 13.) This chart breaks out the four different parts of the Other Procurement account showing the difference between the 1986 appropriation, the 1987 request, and the Gramm-Rudman impact in terms of the dollars that are being reduced—about 4.9 percent in this Other Procurement account.

I might note that we have over 300 line items in Other Procurement, and we are now in the process of assessing what the impact of Gramm-Rudman is in terms of quantity discounts and price adjustments on the contracts that we have under negotiation.

MUNITIONS

I would like now to step briefly through what each budget activity consists of.

(Slide 14.) This is the munitions account. All the growth in this account for fiscal year 1987 is in the WRM area, which is 81 percent of the request. Most of the growth is for the bombs portion; general-purpose bombs and the GBU-15.

(Slide 15.) The next chart, the munitions account consists of these items, and the quantity and dollars that are requested; and these are in millions of dollars.

[CLERK'S NOTE.—Classified slide 16 removed.]

One thing I want to point out is the improved sustainability as a result of the emphasis by the Air Force and OSD on improving the readiness and sustainability of our forces, and in the munitions area, over time what has happened to the money that you have appropriated for us.

Considering just the preferred munitions, the right munition for the right target, we won't reach the ——— sustainability objective during the FYDP, but we do have a significant improvement across the FYDP.

If you consider the other precision-guided munitions, you can see that we reach the ——— Defense Guidance Objective by the end of the fiscal year 1989 funded delivery period.

Considering all munitions, we can satisfy the wartime requirement.

VEHICULAR EQUIPMENT

(Slide 17.) This chart is a breakout of the vehicle account. The major growth is in material handling and aircraft loading equipment for support of our deployable forces.

(Slide 18.) This chart depicts that although we are increasing the replacement funding for our aging vehicle fleet, the requirement remains at about a billion dollars in terms of the backlog, unfunded requirements. Because of the fiscal guidance that I am sure we will be receiving for the next couple of years, this requirement line will probably not descend and we will have a stable program of replacing the aging fleet and keeping it viable.

SUPPORT ELECTRONICS EQUIPMENT

(Slide 19.) This is a program summary of the Electronics and Telecommunications portion of the account. Most of the growth in this area is in the strategic connectivity portion and most is for our warning and surveillance systems.

(Slide 20.) This is a depiction of the major programs that are driving this account. For example, the strategic warning systems are the principal area of growth, along with the tactical communications and command and control systems.

(Slide 21.) This chart is the last segment of Other Procurement called Other Base maintenance. This includes all the support equipment other than those items that are involved in direct support of aircraft and missiles. This supports the total infrastructure of all Air Force bases.

Major growth is in personal safety and rescue that provides Chem-Bio support for our forces.

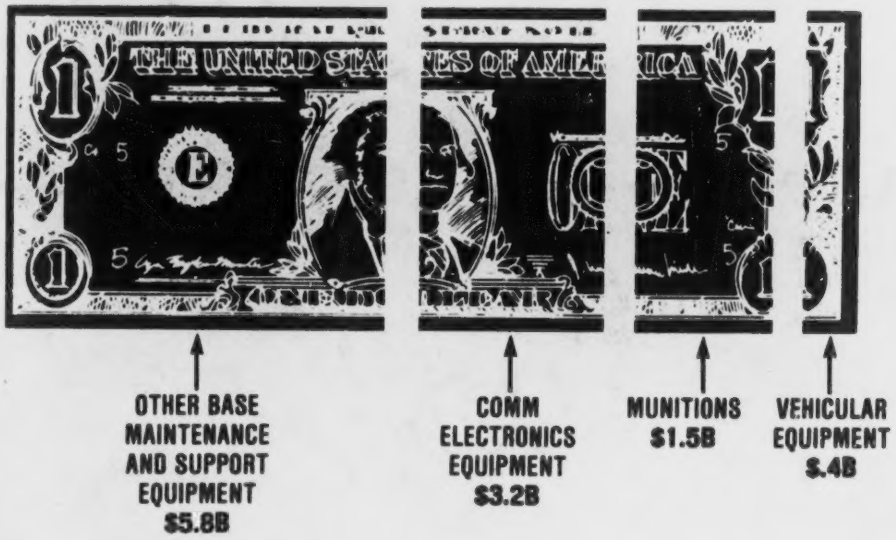
(Slide 22.) This is a breakout of the specific items that are driving the request in this account. I might point out, there is a small amount here required for industrial surge. This is an effort on the part of DOD and the Air Force to recognize our inventory objectives wherein if we go to war, which lasts more than ——— inventures will not support the combat sustainability requirements. Here we are trying to identify selective critical components for production surge.

In our munitions systems, if we bought components and placed some stock into our industry, then we can depress the amount of time it takes us to surge our production base, to account for the gap that we now have between the time that our inventories run out and until the time that production can surge to meet the wartime requirement.

That completes my presentation.

[The slides used by General Skipton during his presentation and his prepared statement follow:]

FY 1987 OTHER PROCUREMENT REQUEST
$10.9B



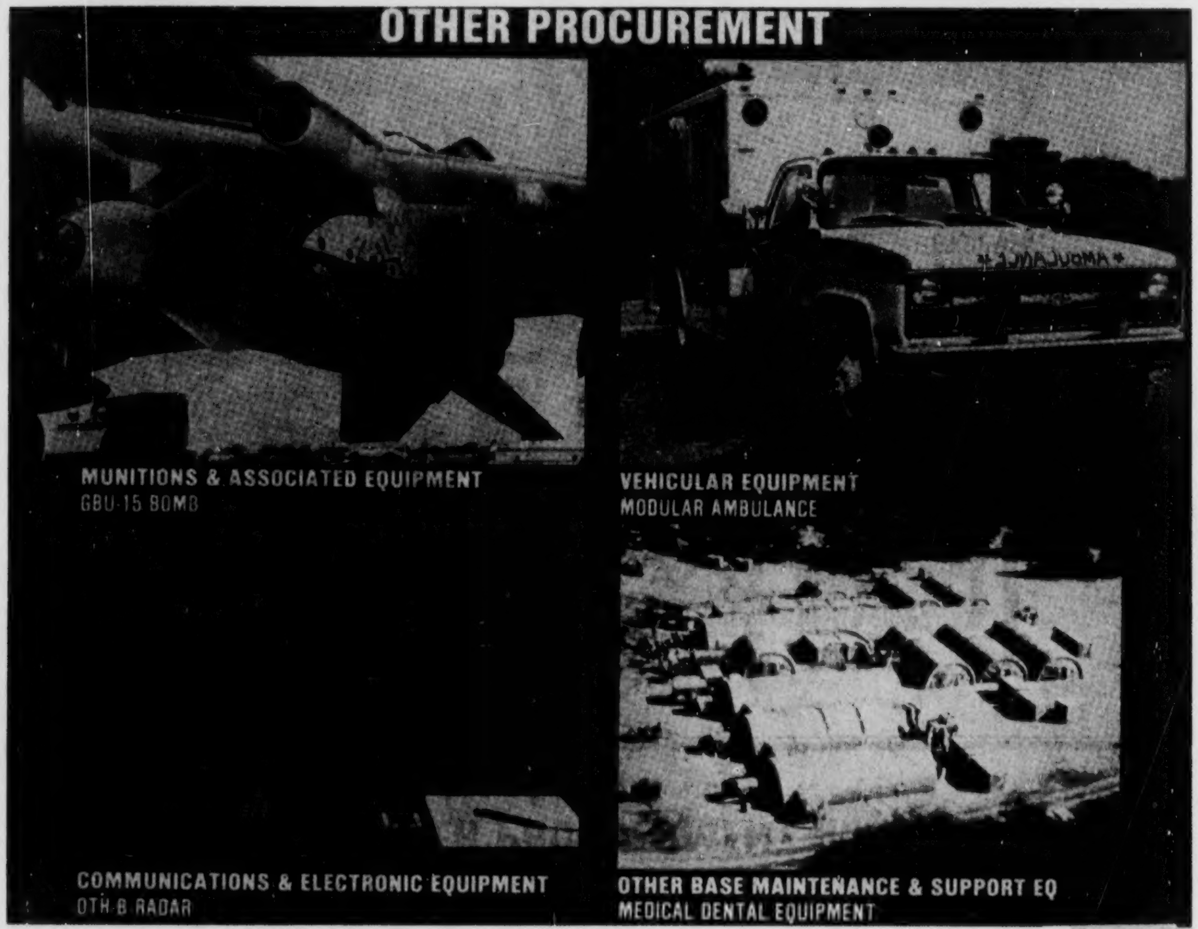
OTHER BASE MAINTENANCE AND SUPPORT EQUIPMENT
$5.8B

COMM ELECTRONICS EQUIPMENT
$3.2B

MUNITIONS
$1.5B

VEHICULAR EQUIPMENT
$.4B

Slide 9



OTHER PROCUREMENT

MUNITIONS & ASSOCIATED EQUIPMENT
GBU-15 BOMB

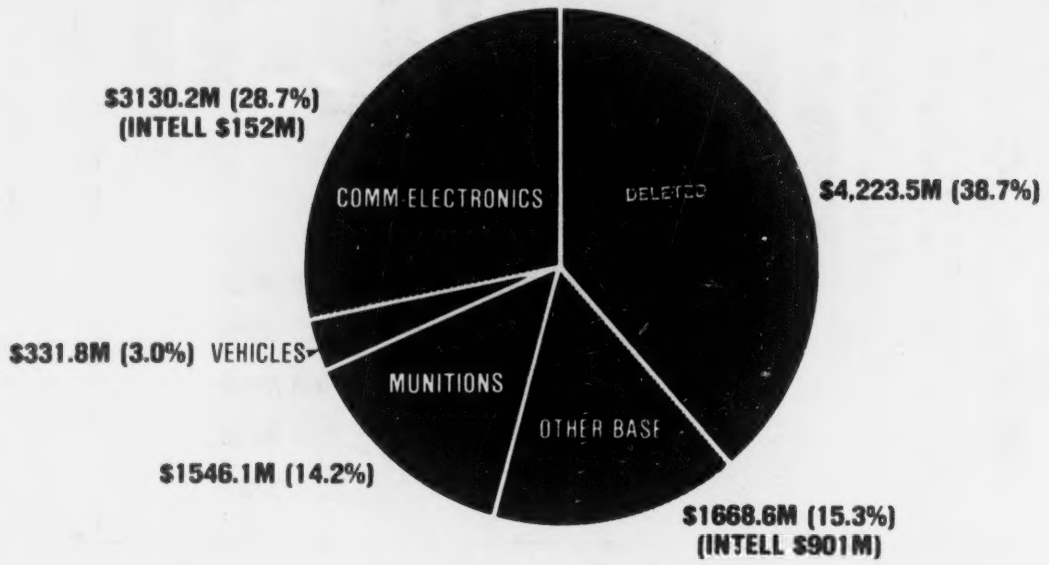
VEHICULAR EQUIPMENT
MODULAR AMBULANCE

COMMUNICATIONS & ELECTRONIC EQUIPMENT
OTH-B RADAR

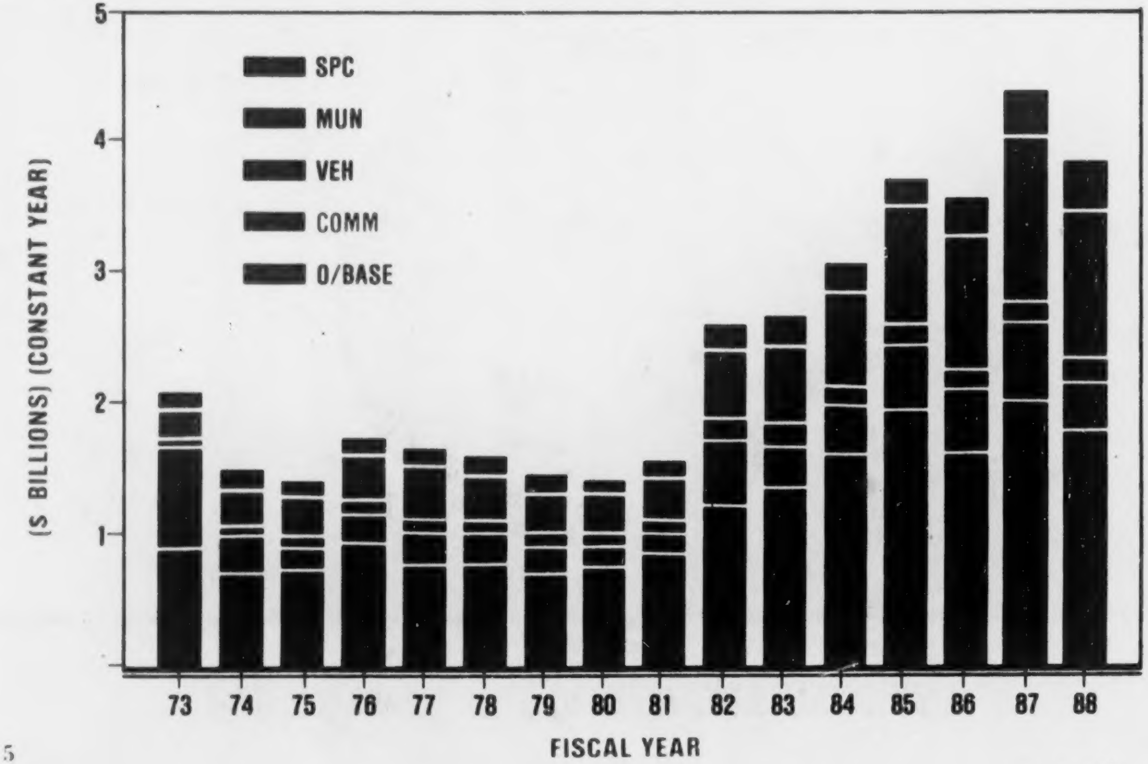
OTHER BASE MAINTENANCE & SUPPORT EQ
MEDICAL DENTAL EQUIPMENT

Slide 10

FY87 OTHER PROCUREMENT REQUEST
$10.9B



APPROPRIATION 3080
OPAF FUNDING HISTORY



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Slide 12

OTHER PROCUREMENT, AIR FORCE FY 1986 TO FY 1987 COMPARISON

WITH GRAMM-RUDMAN

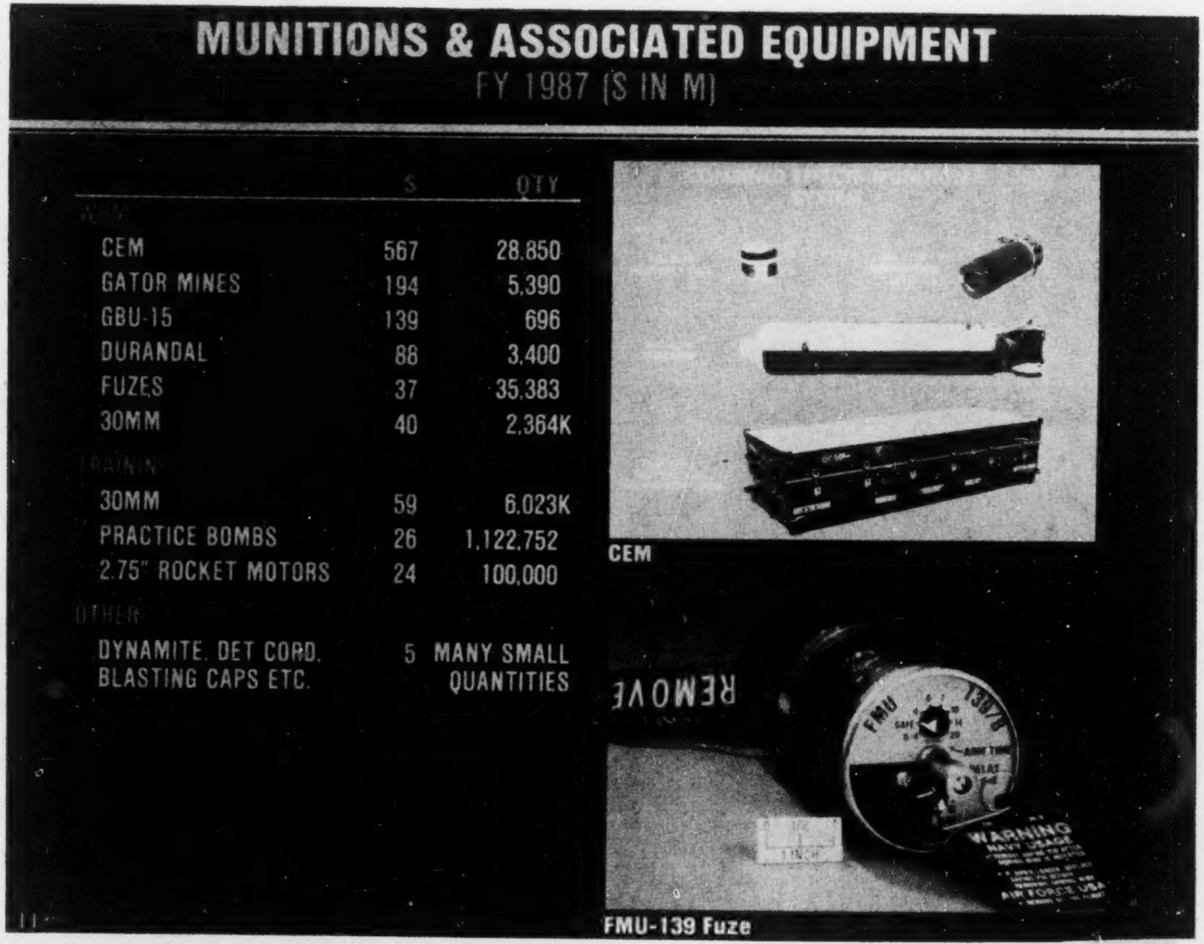
($ IN M)

	FY 1986 APPROP	TENTATIVE G-R	(REV) FY 1986	FY 1987	DELTA
MUNITIONS AND ASSOC EQ	1199.9	-58.8	1141.1	1546.2	+405.1
VEHICULAR EQUIPMENT	304.8	-13.6	291.2	331.8	+40.6
COMM-ELECTRONICS	2493.9	-123.2	2370.7	3183.1	+812.4
OTHER BASE MAINT/ SUPPORT EQUIPMENT	4569.5	-223.4	4346.1	5839.2	+1493.1
TOTAL	8568.1	-419.0	8149.1	10900.3	+2751.2

MUNITIONS AND ASSOCIATED EQUIPMENT PROGRAM SUMMARY

($ IN M)

	FY 86	FY 87
MUNITIONS TRAINING ITEMS	284	288
WAR RESERVE MUNITIONS	911	1,253
OTHER MUNITIONS	5	5
TOTAL	1,200	1,546



MUNITIONS & ASSOCIATED EQUIPMENT

FY 1987 ($ IN M)

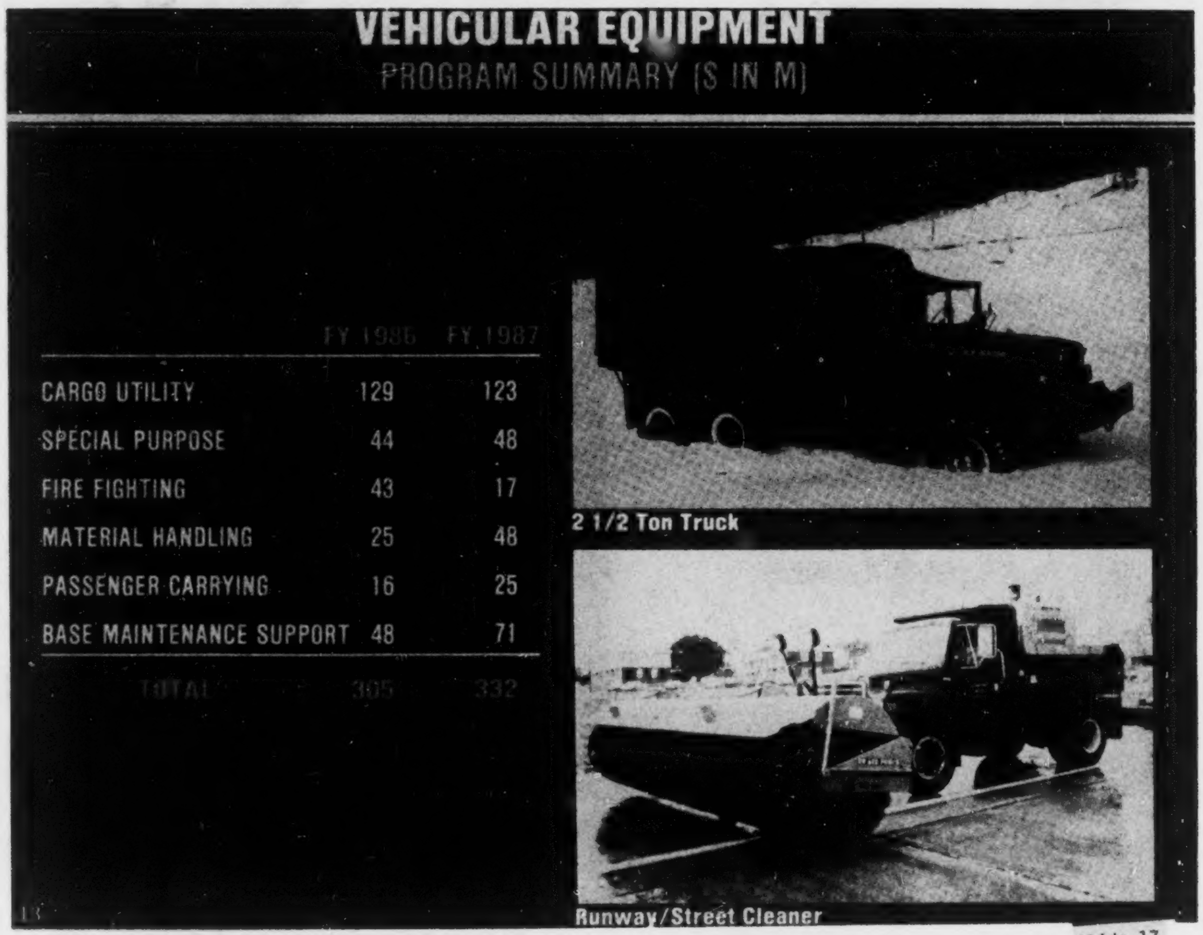
	$	QTY
WAR		
CEM	567	28,850
GATOR MINES	194	5,390
GBU-15	139	696
DURANDAL	88	3,400
FUZES	37	35,383
30MM	40	2,364K
TRAINING		
30MM	59	6,023K
PRACTICE BOMBS	26	1,122,752
2.75" ROCKET MOTORS	24	100,000
OTHER		
DYNAMITE, DET CORD, BLASTING CAPS ETC.	5	MANY SMALL QUANTITIES

CEM

FMU-139 Fuze

REMOVE
FMU
SAFE
WARNING
NAVY USAGE
AIR FORCE USA
1 INCH

Slide 15



VEHICULAR EQUIPMENT

PROGRAM SUMMARY ($ IN M)

	FY 1986	FY 1987
CARGO UTILITY	129	123
SPECIAL PURPOSE	44	48
FIRE FIGHTING	43	17
MATERIAL HANDLING	25	48
PASSENGER CARRYING	16	25
BASE MAINTENANCE SUPPORT	48	71
TOTAL	305	332

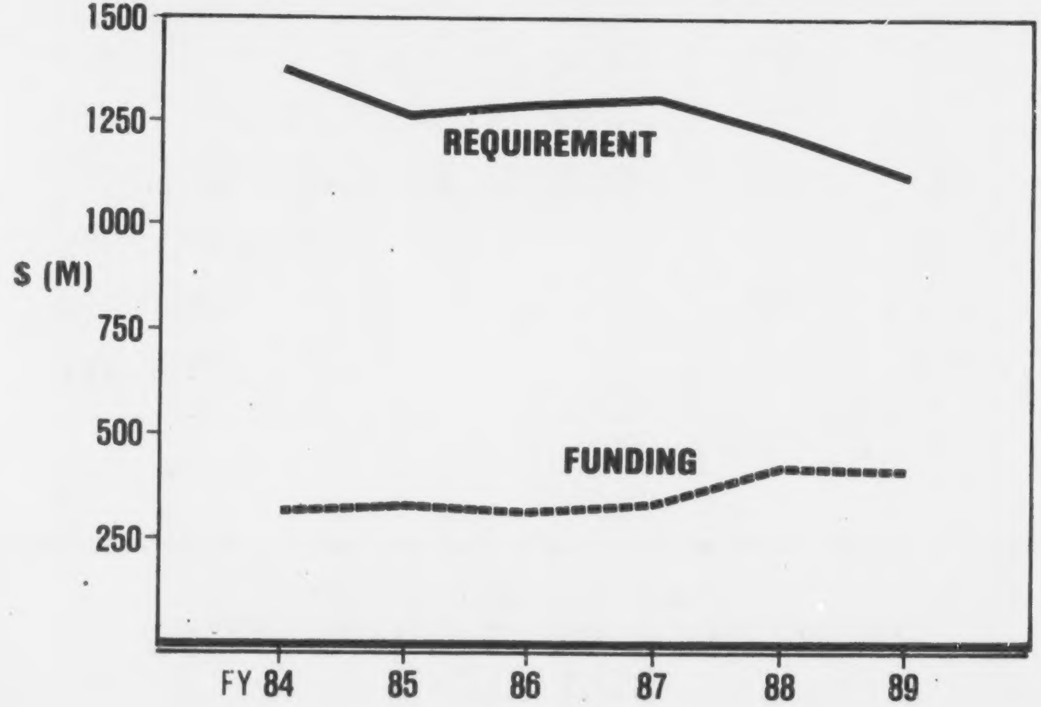
2 1/2 Ton Truck

Runway/Street Cleaner

13

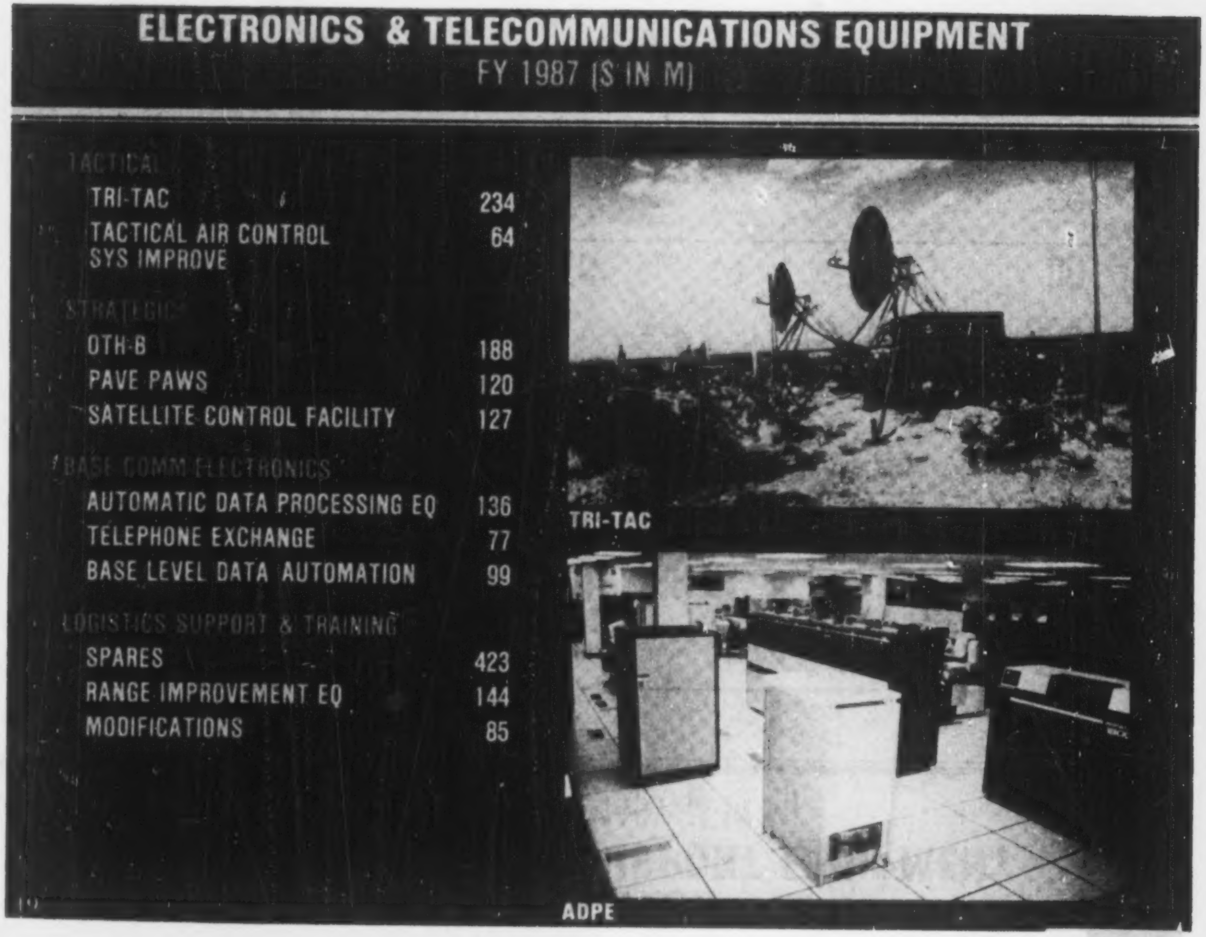
Slide 17

VEHICLE PROGRAM FUNDING LEVELS



ELECTRONICS
& TELECOMMUNICATIONS EQUIPMENT
PROGRAM SUMMARY ($ IN M)

	FY 86	FY 87
TACTICAL	540	595
STRATEGIC	733	1,114
BASE COMM-ELECTRONICS	543	649
LOGISTICS SUPPORT & TRAINING	487	621
INTELLIGENCE PROGRAMS	45	76
COMSEC	146	128
TOTAL	2,494	3,183



ELECTRONICS & TELECOMMUNICATIONS EQUIPMENT

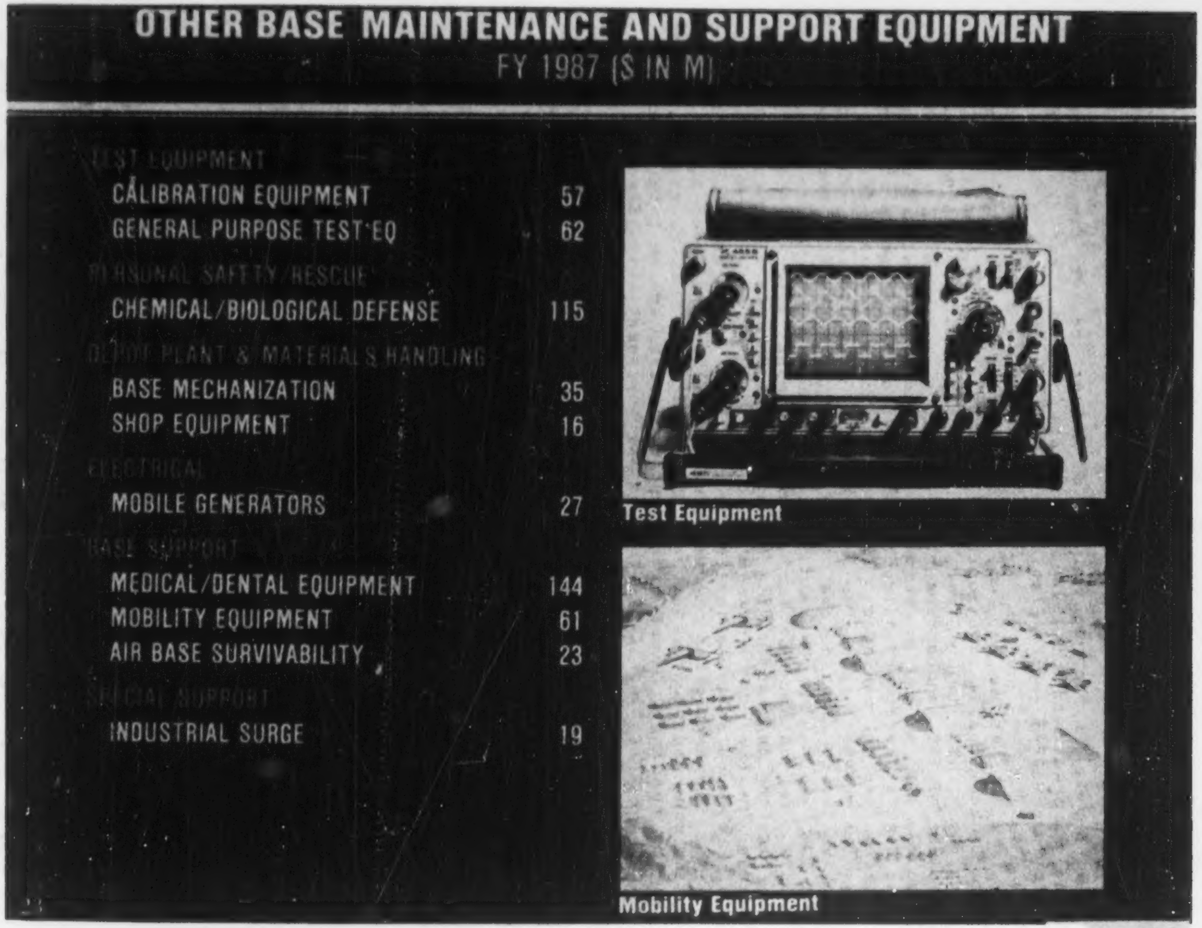
FY 1987 ($ IN M)

TACTICAL	
TRI-TAC	234
TACTICAL AIR CONTROL SYS IMPROVE	64
STRATEGIC	
OTH-B	188
PAVE PAWS	120
SATELLITE CONTROL FACILITY	127
BASE COMM ELECTRONICS	
AUTOMATIC DATA PROCESSING EQ	136
TELEPHONE EXCHANGE	77
BASE LEVEL DATA AUTOMATION	99
LOGISTICS SUPPORT & TRAINING	
SPARES	423
RANGE IMPROVEMENT EQ	144
MODIFICATIONS	85

Slide 20

OTHER BASE
MAINTENANCE AND SUPPORT EQUIPMENT
PROGRAM SUMMARY ($ IN M)

	FY 86	FY 87
TEST AND CALIBRATION EQUIPMENT	113	120
PERSONAL SAFETY & RESCUE EQ	91	139
DEPOT PLANT & MATERIALS HANDLING	52	54
ELECTRICAL EQUIPMENT	36	42
BASE SUPPORT	312	384
SPECIAL SUPPORT PROJECTS	8	30
TOTAL	612	769



OTHER BASE MAINTENANCE AND SUPPORT EQUIPMENT

FY 1987 ($ IN M)

TEST EQUIPMENT	
CALIBRATION EQUIPMENT	57
GENERAL PURPOSE TEST EQ	62
PERSONAL SAFETY/RESCUE	
CHEMICAL/BIOLOGICAL DEFENSE	115
DEPOT PLANT & MATERIALS HANDLING	
BASE MECHANIZATION	35
SHOP EQUIPMENT	16
ELECTRICAL	
MOBILE GENERATORS	27
BASE SUPPORT	
MEDICAL/DENTAL EQUIPMENT	144
MOBILITY EQUIPMENT	61
AIR BASE SURVIVABILITY	23
SPECIAL SUPPORT	
INDUSTRIAL SURGE	19

Test Equipment

Mobility Equipment

Slide 22

STATEMENT BY DIRECTOR, LOGISTICS PLANS & PROGRAMS, AIR FORCE

MR CHAIRMAN AND MEMBERS OF THE COMMITTEE

I welcome the opportunity to appear today to discuss some of the programs and the budget request for the Other Procurement, Air Force (OPAF) appropriation.

First let me say an account as diverse as OPAF is often overlooked because it consists of few major systems, lacks a strong support constituency, and is frequently thought of as unglamorous because of its nondescript title of "Other". However, let me assure you all 300 plus line items in this budget request are essential, and have a direct or indirect role in ensuring our peace and wartime mission can be conducted. With your support, increased funding over the last several years has added a lot of focus to this account and allowed us to reverse some of the past adverse trends. For example, we have been able to partially redress our severe shortages in munitions, enhance Command, Control, Communications systems, begin to curb the continued aging of our wornout vehicle fleet and start a phased replacement program for common support equipment that is quickly becoming logistically unsupportable. Now that we have begun to get these programs on track, we can ill afford, even in the face of an unprecedented deficit, to let them slip back to the days of scarce funding. These basic support systems are so intertwined in our daily operations they could easily represent the difference in a launch, no launch sortie generation.

Now moving to the budget at hand, let me briefly discuss with you some of the funding trends in the Other Procurement, Air Force appropriation. In the appearance before this committee last year, we presented a request of $9.6 billion. When the final appropriation action was completed, this request was reduced to $8.6 billion, or a reduction of $1 billion. The Gramm-Rudman-Hollings balanced budget legislation further reduced OPAF $419 million in FY 1986, plus $108 million in prior years. All of our field activities are actively reviewing their programs to assess the full impact of these reductions. Given the multitude of items and different contracting agencies involved, this is a major effort. To minimize the impact on mission and costly administrative delays in contracting, we anticipate many below threshold reprogrammings. We solicit your support in this effort.

Let me now turn to FY 1987. In last year's request, the FY 1987 funding was projected at $12.1 billion. Since that time, in recognition of the need to reduce funding because of fiscal, not threat requirements, our FY 1987 request has been reduced by $1.2 billion, or more than 10% of the requirement presented to you last year. This parallels the overall Air Force reduction since last year's projection. While the request before you still contains a significant increase as compared to the amounts appropriated for FY 1986, approximately half of the increase is for classified programs.

Before proceeding to a discussion of specific programs and funding by budget activity, let me note a few examples of how Other Procurement supports the DoD priorities of strategic modernization, improvements in readiness and sustainability, increased airlift capability, and modernization and expansion of the tactical forces.

Included under the rubric of strategic modernization are improvements in attack warning systems. In response to deficiencies in current warning systems, the administration began several programs to modernize our capabilities in this area. The sensor elements such as OTH-B, PAVE PAWS, BMEWS, and the North Warning System are all elements of the OPAF request. In addition, Strategic Command and Control Systems are funded in this appropriation. Examples are the Ground Wave Emergency Network (GWEN) program that provides our first EMP resistant Command and Control system and the UHF ground portion of Milstar that provides a jam resistant UHF Satellite Communication system.

The sustainability of our forces in the event of a failure of deterrence is a key aspect in the Department's priorities. A major element of our warfighting capability is adequate munitions to sustain combat forces. The Other Procurement request is the vehicle by which the department requests funds to buy the air-to-ground munitions which will ensure that our forces have sufficient stocks to sustain the level of combat envisioned against the current and anticipated threat.

The readiness of our forces -- a key aspect in the capability of forces to survive and be effective in combat -- is very dependent on items bought with Other Procurement funds. The training munitions used by our air and ground crews are purchased with OPAF funds. Without these training munitions, it is impossible to provide the experience needed by our forces. The vehicles bought with OPAF funds are essential to maintaining the infrastructure needed to support our peacetime operations and sustain wartime activity rates. The common support equipment made available by OPAF funds is essential to maintain our aircraft, missile and communications equipment which is used both to train our people and in the event of war to support combat operations. These are a few examples, but by no means the entire spectrum, of ways in which OPAF procured equipment supports the important objective of readiness.

Other Procurement also has a role to perform in supporting increased airlift capability. It is not enough simply to have more aircraft or to be able to fly those aircraft more hours, given the availability of skilled people, spare parts, and other components. Equipment to load and offload aircraft cargo is needed. Such equipment is part of the Vehicular Equipment program of Other Procurement. In addition, the movement of cargo requires pallets and nets. Both these items are programmed in the Other Base Maintenance & Support Equipment portion of Other Procurement. Finally, OPAF is the means by which the Air Force buys equipment to preposition outside of the CONUS. One important benefit of such prepositioning is the reduction of wartime airlift requirements. The Mobility Equipment program funds this prepositioning in both NATO and Southwest Asia.

Finally, the modernization and expansion of the tactical forces is also dependent on Other Procurement. Force expansion drives increased munitions levels, dictates new requirements for common support equipment, and often increases the requirements for vehicular equipment, all of which are programmed in OPAF. In short, the achievement of defense capabilities and objectives depends on equipment procured with OPAF funds. OPAF does not stand apart from defense capability -- rather, it is a key constituent to the achievement of the required capability.

I have already alluded to the budget activities in Other Procurement, but let me quickly summarize them. The appropriation is divided into four major budget activities. The first is Munitions and Associated Equipment. Funds budgeted in this program are used to buy all the munitions and related equipment used by the Air Force, with the exception of missiles, which are programmed in the Missile Procurement Appropriation.

Vehicular Equipment is the second budget activity. Funds in this program are used to buy 350 different types of vehicles used by the Air Force in its many missions. While the term vehicle connotes passenger vehicles to many people, less than 7% of the FY 1987 program is for those type vehicles.

The third and largest activity is Electronics and Telecommunications Equipment. It includes both strategic and tactical Command, Control, and Communications (C^3) systems as well as Automatic Data Processing Equipment (ADPE) which is so essential for the effective management and command of Air Force programs.

The final activity is Other Base Maintenance and Support Equipment, which includes such things as equipment for our Precision Measurement Calibration Laboratories which in turn support equipment used to maintain high performance aircraft, missiles and C^3 systems. Medical/dental equipment, chemical/biological defense equipment, generators, and night vision goggles are other items in this category, all vital to the lifeblood of the Air Force.

Before proceeding to a more detailed discussion of the amounts requested and the specific programs, I need to quickly note a structural change in this year's submission. In prior submissions, we had lines in various equipment categories titled Items Less Than $900,000. In the budget before you, the threshold for these lines has changed from $900,000 to $2,000,000. The significance of this change is the danger that in reviewing the request, the increase between Items Less funding last year and this year will be viewed as an increasing undefinitized level-of-effort. The increases are largely attributable to the threshold change and are in every case line item specific. In fact, I would like to emphasize that complete line item identification is provided in our procurement back-up books for Items Less than $2,000,000 lines.

Having briefly outlined Other Procurement, I will now present a summary of our request by budget activity, and go into a discussion of the programs and funding requested for each of the four budget activities.

TABLE I

DEPARTMENT OF THE AIR FORCE

OTHER PROCUREMENT, AIR FORCE APPROPRIATION

($ in MILLIONS)

	FY 1986	FY 1987	FY 1988
Munitions & Associated Eq	1,199.9	1,546.2	975.1
Vehicular Eq	304.8	331.8	416.2
Electronics & Telecom Eq	2,493.9	3,183.1	2,940.1
Other Base Maint & Support Eq	4,569.5	5,839.2	5,523.2
TOTALS*	8,568.1	10,900.3	9,854.7

*Totals may not add due to rounding.

I will now address each budget program separately, beginning with the Munitions and Associated Equipment Program.

MUNITIONS & ASSOCIATED EQUIPMENT

The Munitions Program includes all munitions (except missiles) and related equipment purchased for the active Air Force, Air National Guard, and Air Force Reserve.

The FY 1987 munitions request comprises 14% of the Other Procurement appropriation, of which 19% is for peacetime operations and the balance for additional war reserve stocks. The request includes rockets; small arms and aircraft cannon ammunition; bomb ejection and engine starter cartridges; nuclear bomb support equipment; guided and unguided general purpose bombs; general purpose cluster munitions; air delivered mines; the chemical BIGEYE munition; explosively ejected chaff; infrared countermeasures and illumination flares; aircraft tow targets; bomb and dispenser fuzes; machine guns and grenade launchers; several types of demolition explosives; and munitions related specialized test and handling equipment.

The costs of munitions range from 11 cents for a round of 5.56mm blank ammo to nearly $200,000 for the sophisticated, precision guided GBU-15 bomb. Most of the items are procured through the Army Single Manager for Conventional Ammunition (SMCA) and are priced in accordance with the SMCA Conventional Ammunition Working Capital Fund.

Over 90% of the $288 million requested for peacetime operations provides aircrew training munitions to support initial, upgrade and proficiency combat training of the Air Force's FY 1988 and FY 1989 force structure which will be in place when these munitions are delivered. The $1,253 million requested for War Reserve Material (WRM) will provide for another increment of sustainability while also maintaining the critical production base.

The entire munitions request can be directly related to the four pillars of combat capability: force readiness, force sustainability, force modernization and force expansion. I believe very strongly that this year's request reflects a balanced approach to strengthening each of the pillars, and the continued growth in the munitions program is directly attributable to contributions toward improvements in each of these areas. Our aircraft force structure has been both modernized and expanded in the past few years to include growing numbers of F-15 and F-16 aircraft in the active force and the introduction of the B-1 bomber with a conventional munitions capability. At the same time we have expanded the role and modernized the equippage of the Air National Guard and Reserve forces and asked that they step-up their readiness training, exercise participation, and deployment participation. More training munitions are needed in order to support a growing force while providing adequate training stocks to upgrade and qualify aircrews converting to new aircraft and to support increased tempos of day-to-day combat training and exercise participation. In the area of WRM, we are again supporting several pillars simultaneously. First of all we are planning to achieve the levels of sustainability asked of us in the Defense Guidance to support theater prepositioning requirements as well as provide resupply stocks. Since most of the munitions in this program are of the level-of-effort type, we measure this sustainability in days of required sortie support. Obviously, as the aircraft force has grown and become more supportable from the spares perspective, more munitions are required to support this force at higher wartime sortie rates. At the same time as we have been expanding the force and improving sustainability rates, we have been slowly and prudently modernizing the munitions stockpile to introduce munitions that are more easily maintained; more easily loaded on combat aircraft; have a higher reliability and greater probability of target kills, while exposing the launch aircraft to less risk; are more flexible for a variety of targets; or, in some cases, are unique to high value targets for which we had no credible weapon in the past. Examples of these improved munitions are the CBU-87 Combined Effects Munition which provides the force with a performance warranted cluster munition that is effective over a variety of targets; the CBU-89 Gator, an air deliverable antiarmor mine, the FMU-139 retarded delivery electronic fuze which eliminates the requirement for dual fuzing of general purpose bombs; the improved 2000 pound bomb system which provides a heretofore unavailable capability against high value hardened targets; and Durandal which provides a credible airfield attack capability to deny the enemy his take-off and landing surfaces.

This year's request for training munitions is slightly less than last year's appropriation from a real growth standpoint. Being able to support increased levels of training activity for a larger force structure while holding the line on funding growth is a result of several complementary factors. It reflects the fact that peacetime pipeline stock levels have been filled for most items, allowing for full allocation of training munitions to field units which, in turn, eases scheduling conflicts and improves the accuracy of training forecasts and projected expenditures. A cost savings benefit to the government of filled stock levels is the elimination of numerous small and split lot priority shipments directly to the bases to support their training needs. This not only reduces transportation charges, but also eases item management. Further, the Congressional support of larger procurement quantities to fill stock levels, as well as to support annual consumption, has allowed procurement of economic production quantities which have held down unit costs. Finally, both the operations and logistics communities in the Air Force have applied critical analyses of prior years' training expenditures in approving funding for increased training munitions requests from the users. Increased levels of procurements without corresponding evidence of stock level draw-downs or force augmentation are not approved unless there is specific, firm justification. Portions of this request also go directly to support Air National Guard and Air Force Reserve training and are enumerated on the P-1R Exhibit.

With training remaining fairly static from year-to-year, the growth in this year's request is for the procurement of additional WRM stocks of preferred munitions to modernize our stockpile. These added stocks are necessary to ensure the sustainability of our forces in the event of hostilities and to maintain the munitions production base until issues of wartime production surge requirements and production surge capabilities versus on-hand inventories can be adequately resolved. This year's request will add 6,740 more optimally loaded sorties for our conventional warfare forces. Overall levels of sustainability achieved are classified. Our FY 1987 WRM request of $1,253 million is $342 million more than appropriated last year for WRM, representing a larger real growth than the overall Air Force and DoD request. Air Force and DoD leadership deemed this essential to protect the dwindling production base and provide optimum munitions for wartime requirements. Although increased from FY 1986, the FY 1987 request is some $600 million less than projected in last year's request. This reduction is a direct result of lowered fiscal targets and detailed refinements of Air Force priorities across all programs. The growth in munitions funding indicates the high priority that Air Force leadership, as well as the Unified and Specified Commanders, place upon the required sustainability levels for munitions.

As can be seen in Table II to follow, the majority of munitions growth is in the bomb category. Ninety percent of this growth is for critical WRM stockage increments of our newest and most effective munitions: the Combined Effects Munition, the GBU-15, the Hard Target Bomb, and the Gator mine system. The balance is not growth at all, but a renewed request to start procurement of the BIGEYE bomb which was denied funding last year.

TABLE II

MUNITIONS AND ASSOCIATED EQUIPMENT

($ in millions)

	FY 1986	FY 1987	Delta
Rockets and Launchers	30.6	37.7	+7.1
Cartridges	182.9	209.9	+27.0
Bombs	866.6	1,149.8	+283.2
Targets	7.0	13.1	+6.1
Other Items	53.8	85.3	+31.5
Fuzes	41.9	36.9	-5.0
Other Weapons	16.9	13.6	-3.3
TOTALS*	1,199.9	1,546.2	+346.3

* Totals may not add due to rounding

I will now discuss each of the seven categories in more detail:

Rockets and Launchers

The funds requested in this category are for 2.75 inch rocket motors and white phosphorus rocket heads, ground-to-air missile simulators, and ground-to-ground training rockets. We are requesting $32M for 100,000 rocket motors and 117,380 2.75 inch, white phosphorus warheads. These are needed to support training of forward air control aircrews and for replacement of warhead inventory drawdowns. All other procurements in this category are for items requiring less than $2,000,000 each.

Cartridges

This category is comprised of small arms and aircraft cannon ammunition, grenade cartridges, explosively dispensed chaff cartridges, smoke cartridges, and stores ejection cartridges for aircraft pylons and bomb racks.

Small Arms Ammunition. Small arms ammunition includes 5.56mm ammunition for M-16 rifle training, 9mm ammunition for handgun training, and 7.62mm blanks for use in M-60 machine guns during exercises. The 5.56mm ammunition is used by security force personnel during their initial training, annual qualification training, and in annual exercises to maintain proficiency and provide realistic combat training. The 9mm ammunition is used to initially train and annually requalify personnel with their weapons. Portions of the 9mm and 5.56mm procurements will also go to fill WRM mobility requirements. A total of $16.2 million is requested for small arms ammunition, including those funded in the Items Less category.

Aircraft Cannon Ammunition. Funds for 20mm target practice rounds are requested to support air-to-air and air-to-ground gunnery training for all aircraft using internal 20mm gun systems. The increase over last year's request is due to a return to higher levels of air-to-air training after a period of restrained training caused by a shortage of aerial targets. That shortage has been resolved. The request for 20mm combat ammunition is all for WRM bulk packed rounds used in the linkless feed gun systems of the F-15 and F-16 aircraft. $99.1 million is requested for 30mm aircrew training and WRM requirements. The 30mm target practice ammunition is required for A-10 aircraft and GPU-5/A Gun Pod training while 30mm armor piercing incendiary rounds are needed to augment war reserve stockpiles. Procurement is through the Single Manager for Conventional Ammunition who has maintained the dual source competitive contracting strategy initiated by the Air Force which has been so successful in prior years. A total of $133.6 million is requested for aircraft cannon ammunition, including those funded in the Items Less category.

Grenade Cartridges. Training grenade cartridges (40mm) are used for qualification and recurring training of security force personnel who operate grenade launchers in weapon system security roles. Grenade cartridges for the M203 grenade launcher are included. Funds for a one-time, life cycle buy-out of 81mm mortar ammunition are also requested. The Army is switching to the British M252 mortars which use different ammo than employed by the Air Force M29A1 mortars. Air Force annual requirements are below minimum procurement quantity and the new ammunition cannot be used in the M29A1 mortars as it will breach the castings unless the charge is reduced, which reduces the projectile distances. Therefore, the SMCA has proposed a buy-out as the most economical means of ensuring support. A total of $25.6 million is requested for grenade cartridges, including those funded in the Items Less category.

Chaff Cartridges. The RR-170 is used by the A-7, A-10, AC-130, F-4, F-15, F-16, HH-3, HH-53, and MC-130 aircraft to counter enemy radar directed threats. The chaff is fired by explosive squib from the ALE-40 and ALE-45 countermeasures dispensers. Over seventy percent of the chaff purchased will go to fill critical WRM stocks. A total of $20.1 million is requested for chaff cartridges, including those funded in the Items Less category.

Engine Starter Cartridges. The MXU-4 A/A engine starter cartridges provide engine start capabilities for the B-52, F-4, F-111, and KC-135 aircraft when ground power units are unavailable or during alert launches. The cartridges are essential to ensure operational readiness. The KC-135 reengining program has been considered in determining the overall request. A total of $8.3 million is requested for engine starter cartridges.

3000 lb Impulse Cartridges. The ARD-863-1 impulse cartridge is used to separate ordnance from a variety of aircraft. The requested funds are for aircrew bomb delivery familiarization and qualification training. A total of $4.7 million is requested for impulse cartridges, including those funded in the Items Less category.

Bombs

Bombs, the largest category, includes general purpose bombs; anti-armor, anti-material; and anti-personnel cluster bombs; air delivered mines; guided bomb kits; practice bombs; chemical bombs; and associated components such as bomb fins and lugs.

2,000 lb High Explosive Bombs. This year's request of $25.3 million continues procurement of the MK 84 general purpose bomb to restore our sustaining stocks. It also provides for increasing requirements of war reserve stocks for F-16 aircraft entering the inventory. The MK 84 is still the preferred item for selected targets at certain stages of a war, especially when coupled with precision guidance and control units.

2000 lb Hard Target Bombs. The request also includes $37.8 million to purchase the improved 2,000 lb bomb for use against selected hardened targets. The improved version has demonstrated great effectiveness on hardened targets that the MK 84 will not penetrate.

MK 82 Empty Bombs. This year's budget request again includes funds for MK 82/BDU-50 inert filled bombs for aircrew training. These bombs are filled with concrete to simulate the weight of an explosive weapon and are used to ensure aircrews are familiar with aircraft response during actual weapons delivery. A total of $8.1 million is requested to sustain production during the FY 1987 funded delivery period.

Durandal. In the airfield attack role, Durandal still remains the best available runway cratering munition. The FY 1987 quantity of 3400 will be purchased directly from the French manufacturer, Matra. This quantity is estimated based upon the $88.1 million requested. However, actual quantities purchased are a function of the dollar/franc exchange rate at time of contract award. The Air Force's follow-on candidate to replace Durandal is the Direct Airfield Attack Combined Munition (DAACM) using a combination of boosted kinetic energy penetrators and antidisturbance mines.

Timer Actuator Fin Fuze. This item, commonly referred to as the TAFF, is a lanyard actuated, battery-powered, electro-explosive device that provides activation of fins and fuzing for high-drag bombs dropped from the bomb bay of B-1 and B-52 aircraft. It is required to delay fin opening and fuze initiation until the bomb is safely clear of the aircraft. It replaces the old arming wire and belly band techniques which were less reliable and a safety hazard to aircraft internal flight control mechanisms and will be the only technique certified on the B-1 aircraft. The FY 1987 request of $4.9 million is a follow-on to the FY 1986 program of $2.0 million being sought via reprogramming request. Although denied in FY 1986, the HAC provided an avenue to initiate production in FY 1986 if testing milestones were met and the requirement remained valid.

Air Inflatable Retarders. The BSU-49 and BSU-50 air inflatable retarders convert 500 and 2,000 pound general purpose bombs to a high drag configuration. These high drag general purpose bombs can be used at low altitudes and at high speeds. The BSU-49 fin is for 500 pound bombs, while the BSU-50 fin is for 2,000 pound bombs. This year's request provides an additional increment of WRM stocks.

GBU-15. This year's request of $138.9 million is for 696 imaging infrared versions of the guided GBU-15 weapon. It will add another significant increment to our WRM stock level of this highly capable precision stand-off weapon. The GBU-15 is the most capable guided bomb available today. It provides the ability to either acquire the target before or after launch, providing unparalleled delivery flexibility. The data link, incorporated in the weapon system, allows the aircrew to update guidance after release prior to impact. The GBU-15 will be used to attack the most heavily defended high priority targets where delivery of other weapons would require exposure of the aircraft to defensive systems. The AGM-130, a powered version of the GBU-15, is being developed for use against targets that require even greater standoff ranges than the GBU-15 can provide. The AGM-130 is being procured in the Air Force Missile Appropriation.

Practice Bombs. The BDU-33 and BDU-48 practice bombs are used as low cost simulators for general purpose bombs. These small practice bombs simulate the ballistics of the full-scale weapons at a fraction of the cost. They are used on smaller ranges closer to our airfields, reducing training costs while providing accurate simulations for assessing aircrew delivery performance and tactics. $18.1 million is required for these low cost, but effective, training bombs.

Gator Mines. The Gator mines are members of the Family of Scatterable Mines (FASCAM) developed by the Army for use against armor columns. The Gator air delivered mines complement the Army's artillery delivered and mechanically emplaced versions. The CBU-89 is a tactical munitions dispenser filled with both anti-tank and anti-personnel mines that produce an air delivered minefield capable of channeling, delaying, disorganizing, or destroying armored columns. The anti-personnel mines are scattered among the anti-tank mines to delay mine clearance. Funding requests for this program have been reprofiled in line with slower production ramp build-up necessitated by the FY 1985 and FY 1986 Congressional reductions. This year's request of $194.2 million provides for a follow-on production of 5,390 of the CBU-89 Gator mine system, which will leave us significantly short of our inventory objective.

Combined Effects Munition. The Combined Effects Munition (CEM) is a 1,000 pound class free fall cluster munition consisting of a Tactical Munitions Dispenser filled with 202 Combined Effects Bombs (CEBs). The dispenser spins up, following release from the delivery aircraft, and provides dispersion for the CEBs. The CEB contains a shaped charge for anti-armor effectiveness, a fragmentation case for use against materials or personnel, and a zirconium ring for incendiary effects.

This year's CEM request of $566.7 million is for 28,850 units and reflects the favorable price decrease resulting from the dual source competitive procurement strategy initiated by the Air Force and urged by the Congress to be continued in the FY 1986 Appropriation Bill. The second source is now on line and both sources will be competing at full production rates for the first time in FY 1987. The program also includes provisions for a 10-year performance warranty for items delivered to the stockpile.

Procurement at the budgeted rate is necessary to meet minimum near-term goals in wartime sustainability, take advantage of dual source competition, and efficiently utilize our investment in Army facilitization projects and Air Force special purpose tooling for the CEM. This procurement marks another significant step toward converting our aged WRM stockpile to current technology weapons, and in fact provides the largest contribution to the 6,740 sortie support increase discussed earlier. The CEM is the most effective and cost efficient general purpose weapon in the inventory across a variety of target sets.

Targets

The targets category includes towed aerial targets and associated scoring systems used by aircrews to maintain air-to-air gunnery skills. It also includes components and equipment to support the target systems.

Aerial Tow Target. This year's request includes funds to procure another 609 Improved Aerial Gunnery Target Systems (IAGTS-36). The system consists of the tow target assembly, the visual augmentation assembly, the tow reel assembly, and associated support equipment. The older target systems had no reel-in capability and were dropped on the ranges for ground retrieval. Range location and terrain prevented recovery of many targets. A radar frequency scoring feature has replaced the older and less effective acoustical scoring system. The new feature projects the aim point aft over the visual augmentor, provides more accurate scoring and protects the more expensive tow target assembly, again improving the re-use factor for the target. The system can be flown as a cooperative target for initial aircrew familiarization as well as a highly maneuverable target for development of advanced gunnery skills.

Other Items

This category includes infrared countermeasures flares, explosive chaff packages, spares and repair parts, modifications of in-service equipment and a wide variety of miscellaneous items, each costing less than $2,000,000.

Infrared Countermeasure Flares. The MJU-2/B, MJU-7/B, and MJU-10/B infrared countermeasures flares are used to decoy air-to-air and surface-to-air heat seeking missiles away from aircraft. Each flare is designed to mask the heat or infrared signature of the associated aircraft long enough to decoy the missile and cause it to follow the flare rather than the aircraft. The MJU-7/B is used by the F-4 and F-16 aircraft. The MJU-10/B flare is for the F-15. All these flares fit in the ALE-40 and ALE-45 modular chaff/flare dispensers fitted to these aircraft. The MJU-2/B is used with the internal chaff, flare, and photoflash dispenser in the RF-4C. Most countermeasure flares are being procured for WRM stocks, the remainder are for peacetime training. These items are critical to the survivability of our aircraft in a combat environment and have very high priority with our Chief of Staff and the combat commanders. We request $44.5 million for these flares.

Spares and Repair Parts. The spares and repair parts requested are for an initial stock of spare parts for weapons, specialized test sets, and handling equipment being requested this year and for replenishment spare parts stocks for items procured in prior years. The request contains $4.2 million for this essential logistics program.

Modifications. A modest $200,000 is requested for unanticipated modifications to in-service equipment procured in the Munitions and Associated Equipment program. Based on past experience, unprogrammed and unforeseeable safety or other Class IV modifications will be required and will need this minimum modification funding base for program execution.

Fuzes

Items in this category are for those munitions whose fuzes are not procured with the parent weapon. The fuzes provide varying delivery and detonation options, primarily for general purpose bombs.

FMU-139. The FMU-139 common electronic bomb fuze is a joint service (Navy/Air Force) fuze. Production is ongoing for the Navy. Testing beyond the Navy envelope for Strategic Air Command has been completed and the initial Air Force production decision has been made. This year's request of $36.8 million is for 35,383 fuzes, and, when combined with our prior procurements, will significantly improve the balance with retarders in our retard bomb stockpile.

Other Weapons

The other weapons category includes handguns, machine guns, and grenade launchers. This year's request of $13.6 million continues programs initiated last year to improve the capabilities of our weapon system security forces in response to increased terrorist threats and to replace current handguns with a standardized 9mm pistol.

Weapon System Security and Ground Launched Cruise Missile Defense Weapons. The 921 M203 40mm grenade launchers, 97 M60 machine guns, and 27 81mm mortars provide high volume and suppressing fire coverage for Air Force security forces defending overseas airbases and nuclear weapons storage facilities. These weapons are part of the overall program to improve the equipment for these forces to defend against terrorist attacks or against lightly armed military forces likely to threaten rear areas in a general war.

9mm Handguns. The 24,500 9mm handguns requested are the fourth Air Force increment and part of the five-year multiyear joint service common handgun procurement. The Army was the lead service in selecting a standard 9mm handgun for use by all services. The final selection, the 9mm Beretta, is being manufactured under license in Beretta's Maryland plant.

12 Gage Shotgun. Funds are requested for 665 Remington Model 870 pump action shotguns. This weapon is used in anti-terrorist and riot control actions, to defend inside secure areas, to guard prisoners, and for close fire support by pararescue and other personnel deploying into low visibility areas. Seventy (70) of these weapons will be modified with a folding stock for use by the Air Force Office of Special Investigation for protection of selected U.S. personnel.

M-14 National Rifle. The Air Force proposes to buy 174 of these 7.62mm rifles with carrying cases and scopes. They are needed by the Explosive Ordnance Disposal units to render safe unexploded ordnance from a safe distance during wartime emergency rapid runway repair and base post attack recovery operations.

Host Nation Support (HNS). Although this item appears for the first time in the Munitions request, it is not a new program. The program has been funded in Other Procurement since 1983. This request provides for all weapons associated with the program and was broken out from the rest of the HNS program to maintain cognizance over all weapons procurement. All other aspects of the program are included in the Other Base Maintenance and Support Equipment budget activity, P-1 Line 303.

The next program within the Other Procurement Appropriation is Vehicular Equipment.

VEHICULAR EQUIPMENT

Motor vehicles provide vital surface transportation support for Air Force weapon and installation support systems. Vehicles integrate activities and directly contribute to total mission accomplishment. They provide support to launch aircraft, maintain missile field combat readiness; allow for material handling, facility construction and maintenance; and contribute to the security and protection of all Air Force resources.

The Air Force has a requirement for 137,900 vehicles with only 119,442 on hand; we are short 18,458, or 13% of the vehicles to conduct our day to day and wartime mission. Worse yet, of those available, 26,141, or 22%, are long overdue replacement. This is after consideration of our FY 1987 depot overhaul and remanufacture program, which funds life extension of 11,000 high cost vehicles --avoiding cost of new procurement. In spite of this and the $27 million increase over FY 1986, funding constraints and other competing requirements restrict progress toward solving both the replacement and shortage problem in the FY 1987 request. In fact, the program barely keeps pace with the annual cyclic replacement needs and is considered bare bones. Although funding for this program has significantly increased from 1981, the unfunded backlog remains stagnated at $1 billion largely because of the need to acquire vehicles to support weapon system Initial Operational Capabilities such as GLCM and ALCM. Funding for these priority systems and others come at the expense of backlog reduction.

Air Force motor vehicles are centrally managed by the Warner-Robins Air Logistics Center at Robins AFB, Georgia. The Vehicle System Management Office at Robins AFB works closely with local Robins contracting personnel, the Defense Logistics Agency, U.S. Army Tank Automotive Command, and the General Services Administration, to ensure that optimum procurement planning and contracting are achieved.

Two procurement strategies we have employed that have produced excellent results bear mentioning. These are traditional multiyear contracting and grouping of like type vehicles, often referred to as "family buys", into a single procurement action on a competitive basis. Standardization, lower support and operational costs, and reduced leadtimes are some of the benefits of these buy strategies. However, as funding becomes scarce, it will be difficult to continue these strategies and yet retain the flexibility to respond to changes in operational needs and command priorities.

Overall, the FY 1987 request will purchase 11,964 vehicles against a requirement of 45,700. Of this total, only 1,507 are of the passenger carrying type including 195 ambulances for $8.6 million and 335 law enforcement sedans for $3.0 million. The requested funding is $331.8 million. Included within this total is $39.3 million to buy vehicles for the Air National Guard and Air Force Reserve. In keeping with the direction of this Committee,

$200,000 is also included in the vehicle budget to support the Civil Air Patrol. Vehicle requirements are described in the following table according to category.

TABLE III

VEHICULAR EQUIPMENT

($ in Millions)

Category	FY 1986	FY 1987	Delta
Special Purpose	43.7	48.0	+ 4.3
Fire Fighting	43.1	17.3	-25.8
Material Handling	24.7	48.2	+23.5
Cargo Utility	129.7	122.1	- 7.6
Base Maintenance	48.2	71.0	+22.8
Passenger Carrying	15.5	25.2	+ 9.7
TOTALS*	304.8	331.8	+27.0

* Totals may not add due to rounding

Special Purpose Vehicles

This category is comprised of vehicles designed to provide specialized functions such as: fueling/defueling aircraft and the space shuttle, flight line towing of aircraft munitions and ground maintenance support equipment. The FY 1987 request is for $48.0 million. Nearly one fourth, or $9.6 million, will be used to procure tow tractors. These are the real flight line workhorses in that they tow fighter aircraft, munitions loads and all ground support equipment. The flight line tow tractor at $5.5 million is the replacement for the old "AGE Tractor" which has become unsupportable due to age and nonavailability of repair parts. Other significant buys within this category include: 18 telephone maintenance trucks at a cost of $2.7 million; 35 M-49 fuel tank trucks costing $2.5 million; 83 dozers costing $5.5 million; and 11 compressed gas trailers to support such activities as the Vandenberg AFB space shuttle launch facility at a cost of $2.7 million. Remaining dollars will be applied to the acquisition of demineralized water trucks at $2.5 million, hi-reach maintenance trucks at $1.9 million, maintenance trucks at $3.1 million, 1200 gallon fuel tank trucks for $2.1 million, and $15.4 million for various other special purpose vehicles budgeted for less than $2,000,000 each in FY 1987.

Fire Fighting Equipment

Fire and crash rescue equipment provides emergency crash and structural fire protection and rescue capability for Air Force facilities, aircraft, and personnel. Down from last year, the FY 1987 request contains $17.3 million for 223 firetrucks. Included is the P-18 2,000 gallon water tanker truck request for 79 trucks at $6.1 million. Fiscal year 1987 is the final year of the competitive, three-year multiyear multi-service contract. The P-18 provides the capability of extinguishing small structural or grass fires and resupplying other major fire equipment. Other fire equipment to be procured is the Air Force's largest aircraft crash fire truck, the P-15 at a cost of $2.2 million; the P-8 and P-12, 1,000 gallon pumpers at $4.9 million. All of the vehicles in this category are vital to Air Force structural and crash fire protection.

Material Handling Equipment

This group of vehicles' provides the Air Force with the capability for aircraft loading, warehousing, and munitions handling. The $48.2 million requested in this category will be used to procure a variety of equipment such as forklifts, aircraft loaders, and container lift trucks. Funds totaling $9.4 million are requested for the 10K forklift. This is the basic 463L air cargo system forklift designed to handle system related pallets in all environments. The FY 1987 request also seeks approval of $9.8 million to procure 43 additional container lift trucks for terminal movement of containerized cargo, leaving only 36 to buy out the requirement in subsequent years. FY 1987 will be the final year of a three-year multiyear contract to procure 25K loaders at an estimated cost of $4.2 million. Modernization of Material Handling Equipment (MHE) is essential to accommodate enhanced worldwide airlift capability generated by recent C-141 modifications and current C-5B acquisiton. MHE will remain critical as new generation cargo aircraft are brought into the system and 262 air cargo contingency locations located worldwide require support.

Cargo-Utility Vehicles

Vehicles in this category are of both commercial and military design and consist of pickup trucks, heavy cargo trucks, truck tractors, trailers, and dump trucks, among others, which provide cargo movement capability. Funding in the amount of $18.2 million is required to procure 388 M-35, 2 1/2 Ton, 6x6 cargo trucks. This vehicle has a central role in tactical communications and Air National Guard operations. Other military design vehicles, such as the High Mobility Multipurpose Wheeled Vehicle (HMMWV) at $10.7 million and the M-923/925 5 Ton cargo truck for $6.7 million also integral to communications, GLCM, and security support, require funding of $20.2 million in FY 1987.

The vehicles in this category are key to worldwide Air Force transportation and distribution networks. Funds totaling $122.1 million are requested in the cargo-utility category which constitutes the largest dollar and quantity unfilled requirement in the FY 1987 Vehicular Equipment budget request.

Base Maintenance Support and Construction Equipment

Vehicles in this category form the backbone of the Air Base Survivability (ABS) capability. They are also operated by Air Force Civil Engineers in providing maintenance of runways, roads, pavements and grounds, to include flight line and missile field snow removal operations. Equipment procured includes front-end loaders at $7.0 million, excavators for $5.0 million, and runway sweepers at $18.0 million. Cranes, costing $12.1 million in FY 1987, not only support the engineers, but also aircraft and Minuteman/Peacekeeper missile maintenance. Also included is $4.1 million for Air Force watercraft, essential to aircrew water survival training, waterway cargo movement, firing range clearance, and drone recovery operations. Finally, $6.5 million and $.3 million are included for spares/repair parts and modifications to the Air Force vehicle fleet, respectively. A total of $71.0 million against a requirement of $237 million is contained in the FY 1987 budget request for items procured in this category.

Passenger Carrying Vehicles

Funding for 1,507 passenger carrying vehicles composed of ambulance buses costing $2.7 million and modular ambulances at $5.9 million required for emergency medical transportation, other various sized buses at a cost of $7.4 million, law enforcement vehicles for $3.0 million, sedans at $3.1 million, and station wagons at $3.2 million is requested to meet minimum needs. Besides providing group transportation at all Air Force installations, buses are a major source of transportation in supporting aircrews and mass casualty/natural disaster situations. Sedans and station wagons represent a very small portion -- less than two percent of the FY 1987 request and are used in daily general passenger transportation roles. Station wagons are a primary vehicle in the movement of KC-135, KC-10, B-1B and FB-111 aircrews. The FY 1987 budget request contains $25.2 million for procurement of passenger carrying vehicles. $3.3 million of the $9.7 million FY 1987 increase results from reclassification of two vehicle types into the passenger carrying category; $3.0 million for law enforcement vehicles and $.3 million for 14-20 passenger buses.

This concludes the Vehicular Equipment presentation. The next program I will address is Electronics and Telecommunications Equipment.

ELECTRONICS AND TELECOMMUNICATIONS EQUIPMENT

The Electronics and Telecommunications portion of the FY 1987 Other Procurement, Air Force request is $3.2 billion, which includes $56.1 million for support of the Air Reserve Forces. The program covers an extremely wide range of systems from small mobile radios to large antenna elements nearly a half-mile long. Within that spectrum are included ground satellite terminals, weather forecasting equipment, radar systems of all types, specialized command and control systems, Automatic Data Processing Equipment, and the spares and modifications required to support new and existing systems.

Basically, the account covers the Air Force needs for communications-electronics systems to be used in ground applications. Airborne or space based communications systems are funded in the aircraft or missile appropriations.

The Air Force request for Electronics and Telecommunications procurement funds has historically been divided into the eight budget categories depicted in Table IV. While this may provide a convenient historical track of the types of systems procured, it does not relate the funds request to the mission areas supported. Therefore, for purposes of my presentation, I will describe the programs by mission area: Communications Security (COMSEC), Intelligence, Strategic, Tactical, Base Communications-Electronics, and finally, Logistics Support and Training.

TABLE IV

ELECTRONICS AND TELECOMMUNICATIONS EQUIPMENT

($ in Millions)

	FY 1986	FY 1987	Delta
Communications Security	146.4	128.2	- 18.2
Intelligence Programs	44.9	76.3	+ 31.4
Electronics Programs	722.5	754.4	+ 31.9
Special Comm-Electronics	619.7	864.4	+244.7
Air Force Communications	345.5	476.1	+130.6
DCA Programs	78.5	203.7	+125.2
Organization and Base	460.5	594.8	+134.3
Modifications	75.9	85.1	+9.2
TOTALS	2,493.9	3,183.1	+689.1

COMSEC

The COMSEC request is $128.2 million. This decrease of approximately $18 million from the amount appropriated in FY 1986 is due to programmatic decreases in space related COMSEC requirements. It provides essential encryption and decryption capability for tactical communications equipment, strategic command and control, and general purpose C^3 systems. Both voice and data communications must be protected in order to deny the enemy vital intelligence with which counter operations could be conducted. Communications security is absolutely essential to the successful conduct of Air Force operations.

Intelligence

Intelligence programs total $76.3 million. This represents an increase of $31.4 million from the amount appropriated in FY 1986. The increase is programmatic to several Intelligence programs. They include data handling systems, intelligence training and communications equipment, and miscellaneous minor items. Because of security clearance requirements, details of this program are presented to a special subcommittee and will not be presented here.

Strategic

Strategic programs include Strategic Defense Systems, Strategic Connectivity Systems, and Space Systems. A total of $1,114 million is requested for Strategic Communications programs in FY 1987. This represents an increase of $381 million over the amount appropriated in FY 1986. Included are the various radar sensor units required to gather data on missiles and aircraft, e.g., PAVE PAWS and OTH-B, the means of transmitting and correlating the data and issuing required commands to respond to the threat, e.g., Cheyenne Mountain Complex upgrades and MEECN, and finally the ground based communications segment of the Air Force space programs, e.g., Satellite Control Facility and CSOC. The increase is mainly driven by the requirement to upgrade radar sensors such as PAVE PAWS and BMEWS, new programs to enhance connectivity such as Milstar and CINC Mobile Command Centers, and phased improvements to such space related programs as the Satellite Control Facility and the Consolidated Space Operations Center (CSOC).

I will first discuss the Strategic Defense systems.

Strategic Defense

These programs provide ballistic missile plus bomber and cruise missile surveillance and warning. Deficiencies associated with age and coverage limitations make existing early warning and surveillance networks vulnerable to Soviet exploitation. Therefore, the Air Force has undertaken several programs which collectively address these known and anticipated deficiencies. However, no one program provides the total surveillance capability required. To meet the existing and anticipated strategic threats will require the combined coverage of all systems requested. A total of $540.5 million is being requested for Strategic Defense Systems. A discussion of some of the major programs follows:

Over-The-Horizon Backscatter (OTH-B) Radar. OTH-B provides wide area, long-range, all altitude surveillance against bomber and air-to-surface missile attacks on North America. Currently deployed air defense radars have a maximum range of approximately 200 miles, have gaps in coverage, and would be ineffective against modern cruise missiles. OTH-B will extend radar coverage to 1800 miles thereby increasing warning time available for survival of retaliatory forces and providing additional decision time for National Command Authorities. There are four OTH-B radar systems planned. Two will provide 180° azimuthal coverage and will be located on the east and west coasts. The third system will be located in the Central U.S. and will provide south looking coverage as well as link the east and west coast systems to form a surveillance barrier on three sides of North America. The North Warning System, looking north, completes the barrier around the continent. Finally the fourth system will be located in Alaska and provide coverage for Aleutian Island air defense.

Funds for the east coast system plus the first 60° sector of the west coast system have already been appropriated. The FY 1987 request of $188.2 million plus the $40 million appropriated in 1986 for long lead parts will allow the Air Force to complete the west coast system. Funds for the Central and Alaskan systems are planned for FY 1988 and beyond.

PAVE PAWS/SLBM Warning Systems. The PAVE PAWS radars provide detection and warning against Sea Launched Ballistic Missiles (SLBM). There are currently two systems in operation -- one in the northeast at Otis AFB, Massachusetts, and a second in the northwest at Beale AFB, California. PAVE PAWS systems funded in prior years are now being installed at Robins AFB, Georgia and near Goodfellow AFB, Texas. The $120.2 million requested in FY 1987 will provide system upgrades for three of the four sites. These upgrades consist of computer upgrades at the Otis and Beale sites, a 10db power upgrade at the Robins site, and a 6 db power upgrade at the Beale site. The computer upgrades will standardize data processing among the sites and allow for increased traffic handling capacity. The Robins AFB power upgrade will extend the range of the site and allow the Air Force to shut down the FPS-85 radar system at Eglin AFB, Florida.

Ballistic Missile Early Warning System (BMEWS). BMEWS consists of three sites located at Thule, Greenland; Clear, Alaska; and Fylingdales, England. Its purpose is to detect and warn of a ballistic missile attack on the United States, Canada, the United Kingdom, or Europe. The existing BMEWS radars were built in the late 1950s and no longer meet the threat. This fact plus logistics support problems associated with age make it necessary to update the radars. Funds for the Thule site were appropriated in prior years and the site is presently under construction. In FY 1986, $70.8 million was appropriated for the first two faces of the Fylingdales BMEWS site. The $41.0 million requested in FY 1987 will fund the third and final face for that site, providing a full 360 degrees of coverage plus power upgrades to all three faces to improve range and performance.

Strategic Connectivity

Strategic connectivity includes command and control systems which provide early warning, assessment and information to and from military commanders and the NCA. The NORAD Cheyenne Mountain Complex, SAC Command Center, National Military Command Center, Alternate National Military Command Center, and Airborne Command Posts are the vital strategic command and control elements. Measures to improve the reliability and survivability of these vital systems are underway. A total of $280.3 million is being requested for Strategic Connectivity Systems. A discussion of some of the FY 1987 programs follows:

Milstar. The Milstar satellite communications system will provide worldwide, secure, highly jam-resistant, survivable voice and data communications to enable the President and the Commanders-in-Chief to command and control strategic and tactical forces through all levels of conflict and in a nuclear environment. The system will consist of satellites, mission control elements located on a variety of platforms and ground terminals to meet the needs of the operational users. In FY 1987, $50.6 million is requested to procure transition kits for the upgrade of AFSATCOM ground terminals to full Milstar compatibility. This upgrade effort is essential in order to maintain command and control connectivity during the transition from AFSATCOM to Milstar.

Minimum Essential Emergency Communications Network (MEECN). The MEECN program includes efforts to provide assurance that the National Command Authority can deliver Emergency Action Messages for command and control of our nuclear forces. Fiscal year 1987 funds are requested to continue production on one MEECN program -- Ground Wave Emergency Network (GWEN).

GWEN will be the first major communications system deployed to meet the high altitude electromagnetic pulse (EMP) threat in a nuclear environment. Through a grid of unmanned EMP-hardened, jam-resistant ground wave relay nodes throughout the continental United States, GWEN will provide connectivity between the National Command Authority, major command centers, missile warning sites, and the nuclear forces. Continued production of relay stations and user terminals, signal processing equipment, and relay node antennas require $97.2 million.

Space Programs

The third piece of Strategic Communications consists of those ground communications facilities that support space and missile test ranges, satellite control, space systems operations, meteorological satellites, and the space shuttle. A total of $293.2 million is being requested for Strategic Communication Space Systems. A discussion of some of these programs follows:

Space and Missile Test Organization (SAMTO) Ranges. The SAMTO Ranges provide the primary support for all U.S. missile tests and space vehicle launches at the only two space and missile ports in the U.S. -- Kennedy Space Center and Vandenberg AFB. These ranges include telemetry, tracking, optics, timing, and associated data handling computational and communications systems.

The FY 1987 request of $66.9 million continues an improvement and modernization program for each range. Equipment replacements, correction of deficiencies, new capabilities, and communication upgrades will enable the ranges to better support new and ongoing programs such as the Space Shuttle, and other DOD, NASA, and government agency test programs.

Consolidated Space Operations Center (CSOC). This program is designed to provide a single location DOD facility for satellite and space shuttle operations. The CSOC consists of two main operating elements: The Satellite Operations Complex (SOC) and the Shuttle Operations and Planning Complex (SOPC). The need for satellite control capability is based on the vulnerability of the single node Satellite Test Center (STC) in Sunnyvale, California. The need for the Shuttle control capability stems from the inability of the Johnson Space Center to meet all DoD requirements for planning and conducting DoD Shuttle missions. Fiscal year 1987 CSOC acquisitions totalling $76.0 million include further upgrades for the SOC, the initial increment of SOPC systems for Shuttle mission planning, plus the communication systems to support these elements.

Satellite Control Facility. The Satellite Control Facility (SCF) is a national range tasked to support the research, development, test, evaluation and operation of satellite systems of the Department of Defense. It consists of a satellite calibration site, twelve telemetry, tracking and commanding antennas, and a single headquarters node located at Sunnyvale AFS, California. The CSOC program previously discussed will provide a second node to the SCF system. The SCF mission is to support test and operations of assigned DoD satellites and to improve and modernize the satellite control network. $126.6 million of FY 1987 funds are required for the continuing SCF upgrade effort. Among the major projects planned for in FY 1987 are the Advanced Remote Tracking Station (ARTS) program and the SCF Improvement and Modernization effort. The ARTS program replaces existing remote tracking stations with more capable and supportable systems. The SCF Improvement and Modernization effort provides upgrades to keep the SCF compatible with changes in current satellite programs.

Tactical Communications

Tactical Communications provide modern, interoperable, jam resistant, and secure C^3 equipment for theater and tactical forces. Included in this category is Comm support for REDCOM and CENTCOM, GLCM units in Europe, tactical SIGINT programs, plus TRI-TAC requirements. A total of $595.4 million is requested for tactical programs in FY 1987, an increase of $55.2 million over that appropriated in FY 1986. The increase is tied to a variety of tactical programs such as TRI-TAC and MAC Command and Control. Typical of the tactical programs are the following:

Tactical Airlift Equipment. As the DoD Single Manager for Airlift Services, CINCMAC supports all DoD logistics and supply requirements. To fulfill this role, CINCMAC needs an effective Command and Control (C^2) system. This system requires a combination of fixed and deployable assets to support a worldwide airlift mission. Unfortunately, CINCMAC C^2 systems have not kept pace with MAC's changing airlift mission, Tactical Airlift, Special Operations, and Specified Command Status. The $36.1 million increase in this program is indicative of the priority and critical need to rectify this problem. The $53.2 million requested in FY 1987 for

MAC will procure initial C^2 capability in the area of automation support, worldwide HF radio coverage, and communications support for Special Operations Forces.

Tactical Air Control Systems Improvements (TACSI). The Tactical Air Control System (TACS) is the Air Force's primary means of controlling its fighter forces in a tactical air-to-air battle. From this ground system the Air Force Component Commander controls and coordinates all tactical air operations. This ability to control and coordinate its forces is a critical element in ensuring success in an air battle. The existing ground TACS equipment is late 1960s vintage and is rapidly becoming obsolete and logistically unsupportable.

The FY 1987 request of $64.3 million will continue the Modular Control Equipment (MCE) program to correct this logistics deficiency. Through the MCE program, the Air Force, in conjunction with the Marine Corps, will acquire survivable, transportable, and modern equipment that will significantly enhance its capability to command and control its forces. Fielding of this equipment will substantially improve Tactical Command and Control readiness, sustainability, and operational capability at all operations centers of all active and Air National Guard TACS units.

Joint Tactical Communications Program (TRI-TAC). TRI-TAC is a joint service effort to develop and acquire tactical communications equipment that can be used by all services in combat. The FY 1987 request of $234.1 million will provide production funds for the AN/TSQ-111 Communications Nodal Control Element (CNCE) and the AN/TRC-170 TROPO radio, plus a variety of circuit switches, the AN/TTC-39A, the AN/TTC-42, and the SB-3865. The various pieces of equipment bought under the TRI-TAC program can be deployed in tailored configurations to provide reliable command, control, communications and intelligence to the battle field commander. In the Air Force, TRI-TAC equipment will replace existing mobile equipment in the Combat Communications groups and the tactical air control system units. Unlike much of the existing equipment, the new TRI-TAC equipment will be interoperable, secure, and supportable as well as allowing for increased voice and data transmission capability.

Tactical C-E Equipment. The Tactical C-E Equipment line covers the remaining essential communications requirements in support of the Tactical Air Control System (TACS) and the Combat Information Systems Units not covered in the TRI-TAC line. The $66.4 million requested in FY 1987 will procure a variety of equipment. Among the major buys are the Digital Communications Terminal (DCT), the Pacer Speak program, and the TSC-60 replacement program. The DCT is a hand-held message processor that provides high speed communications from Tactical Air Control advance parties in support of air strike and air reconnaissance missions. The Pacer Speak program procures a family of common radios to replace radios currently used by our Air Force combat forces that are logistically unsupportable. The Pacer Speak radios will be used by the Tactical Air Control Parties which deploy with U.S Army maneuver battalions and provide the Command and Control link for requesting immediate Air Force support in its Close Air Support missions. The TSC-60 replacement program provides high frequency radio equipment to our active and Air National Guard TACS units.

USREDCOM/USCENTCOM. The United States Readiness Command (USREDCOM) is tasked to respond to crisis situations on a worldwide basis. The United States Central Command (USCENTCOM) is specifically responsible for a crisis situation response in Southwest Asia. Both commands require transportable communications equipment to support deployments and to provide connectivity to the Defense Communications System. Fiscal year 1987 funds continue support for these requirements. Specifically, $13.4 million is requested for REDCOM and $26.4 million for CENTCOM communications requirements.

Base Communications-Electronics Equipment

The Base Communications-Electronics program includes equipment and C^3 systems that support both tactical and strategic forces. Weather observation, air traffic control and landing equipment, common user base telecommunications equipment (telephones, message processing and radio equipment), and automatic data processing equipment comprise this section. A total of $649.3 million is requested for Base Communications-Electronics programs. This increase of $106 million is driven mainly by increased requirements for radio equipment, base level data automation equipment, weather equipment, and upgrades to our wideband communication systems. A discussion of these programs follows:

Weather Observation & Forecasting. This is a continuing program to provide meteorological forecasting and space environmental equipment required by the Air Force Air Weather Service to support the worldwide missions of the Air Force and Army. Among the programs that require FY 1987 funds is the Next Generation Weather Radar (NEXRAD) program. NEXRAD will replace current obsolete weather radars and improve weather support. Use of new technology will permit better storm detection and improve warning accuracy. $61.5 million is required for these programs.

Common User Communications. Several programs affecting base communications require FY 1987 funds. For example, we are requesting $99.2 million to continue the Base Level Data Automation Program to replace obsolete and technically deficient computer systems. Some examples of operations are supply, maintenance, civil engineering, personnel, and accounting and finance. The Telephone Exchange Upgrade is another program to replace obsolete and logistically unsupportable government-owned equipment with modern state-of-the-art equipment. Fiscal year 1987 funding of $76.6 million continues this initiative at stateside and overseas locations.

Automatic Data Processing Equipment (ADPE). Exclusive of the Base Level Data Automation program, we are requesting $135.6 million to continue the Air Force's program to upgrade its Automatic Data Processing Equipment (ADPE) to enable it to manage its resources in a modern and more efficient manner. The program supports Air Force-wide activities and includes extensive upgrades to the Air Force's Logistics Management Systems (LMS). The LMS will provide the Air Force with improvements to the requirements determination process, the spares acquisition process, the asset distribution system, and the system and component maintenance system. Also included is ADPE to improve the management of resources, equipment to modernize war planning, weather data collection, and command and control systems. A number of off-the-shelf computers and associated peripheral equipment for all levels of command and organization are contained in the request. Fiscal year 1987 also includes $4.9 million to complete the Congressional mandate to purchase leased computer systems.

Radio Equipment. Much of the radio equipment in the Air Force inventory is obsolete and difficult to support. To correct this situation, a replacement program called PACER BOUNCE was initiated. Fiscal year 1987 funds continue procurement of securable high frequency radios. Also included are funds for SCOPE FORCE, a tri-service program to upgrade command and control of European and Pacific Forces and enhance their capability to execute decisions of the National Command Authority. A total of $58.3 million is requested for these programs.

Logistics Support and Training

The logistics support and training portion of the program will be the final area of discussion. Initial spares, replenishment spares, modifications, and training equipment in support of tactical, strategic and general purpose forces are included in this category. These programs are extremely vital to the sustained operation of all Air Force C^3 systems. A total of $621 million is requested for logistics support and training. This increase of $133.9 million is programmatic to the overall increase in the Electronics and Telecommunications program that must be supported. A brief discussion of these programs follows:

Spares and Repair Parts. The Electronics and Telecommunications Spares funds provide initial and follow-on support for such varied systems as radios, radars, weather equipment, tactical communication systems, and satellite terminals. The multitude of systems supported plus the wide variety of their technologies and operating environments demand an extensive and responsive supply system to provide C^3 capability when and where required.

The increased requirement for comm-electronics systems in recent years, particularly in the area of strategic surveillance and tactical command and control, carries with it a corresponding increase for spares support if we are to ensure the readiness and sustainability of C^3 systems. In FY 1987 the Air Force is requesting $423 million for communications-electronics spares. Even though an increase of $72.6 million over FY 1986, it funds only 93% of our projected FY 1987 requirement. The increased spares request is programmatically relatable to the near $700 million increase in the overall account. Without it, we simply cannot meet the demands we will face to deploy and control our forces on a worldwide basis.

Modifications. For purposes of economy the Air Force often chooses to modify existing communications equipment rather than replace it. The reasons for doing so include safety deficiencies, material deficiencies, and logistic support problems as well as requirements for enhanced capability at lesser cost than new acquisitions. These modifications significantly enhance our strategic, tactical, and base communications systems with minimal expense to the Air Force. Without a modification capability, the Air Force would face the added cost of new acquisitions or continued deterioration of existing systems. Our FY 1987 request includes $45.2 million for three Class V modifications and $40.0 million for numerous Class IV modifications including $19.7 million for the final buy of the AN/MPN-14 Landing Control Central Solid State Modification kits.

Range Improvement. The Air Force operates numerous ranges worldwide that provide realistic combat arenas for weapons testing and for tactical and strategic aircrew training. The ranges must simulate enemy jamming systems and threat emitters, such as anti-aircraft artillery, surface-to-air missiles, and radar acquisition systems. They must also be capable of assessing airplane performance in both air-to-air and air-to-ground combat in a realistic threat environment. Fiscal year 1987 funds of $143.9 million will provide range instrumentation and threat simulators which reflect current Soviet threats.

This concludes discussion of the major Electronics and Telecommunications program. There are a number of other smaller but equally vital programs such as the Productivity Investment line, the Fiber Optics program, the Items Less Than $2,000,000 line, and the Physical Security Sensor program that are included in this budget activity and require FY 1987 funds. Unfortunately, time and space do not permit a complete description. The final budget activity to be presented is Other Base Maintenance and Support Equipment.

OTHER BASE MAINTENANCE AND SUPPORT EQUIPMENT

This budget activity includes the widest variety of diverse equipment and special programs. In the Other Procurement appropriation, and especially this budget activity, the equipment procured supports the total force, all major commands and separate operating agencies as well as the Air National Guard and Air Force Reserve. The equipment directly or indirectly supports every weapon system in the Air Force inventory, every USAF unit and installation and all military personnel including military dependents. It is as crucial to supporting and maintaining the combat forces as the peculiar aircraft support equipment procured in other appropriations.

It provides the basic logistics infrastructure for day-to-day operations as well as the mobility, readiness, sustainability and survivability which makes rapid worldwide deployment possible. Examples of equipment items procured range from the sophisticated electronic test equipment used in Precision Measurement Equipment Laboratories (PMELs) to chemical and biological defense equipment. Cargo pallets and nets, aircraft arresting systems, night vision goggles, mechanized material handling systems, bare base support equipment, air base survivability equipment and medical and dental investment equipment are also procured. Examples listed constitute $450.7 million of the $769 million requested to support weapon systems and Air Force bases.

The increased funding for this budget program represents a corporate Air Force and DOD initiative to correct the deterioration of support that has been allowed to accumulate over the past years. In the FY 1987 budget request, the Other Base Maintenance and Support Equipment Program is valued at $5.8 billion of which $5.1 billion or 87 percent supports classified activities; the remaining $769 million is for support of all weapon systems and bases in the Air Force. Of this, over $26 million is budgeted for the Air National Guard and Air Force Reserve.

The impact of funding shortfalls varies by equipment item depending on its relationship to the weapon or support system being supported. For example, while the unit is at home station, the limited test equipment may be shared by the various maintenance shops. Although this action helps maintain our peacetime readiness, it increases the equipment usage with the concomitant increase in break rate and repair costs. Shortages become critical when units disperse to several geographically separated wartime employment sites. Since sufficient assets are not then available for each sub-unit, the sustainability of the affected system is severely impacted and the supported item cannot be diagnosed, repaired, or calibrated.

The Air Force Logistics Command centrally manages over 20,000 different items of equipment with an inventory of $4.0 billion, including many items in this budget activity. For budgeting purposes, Other Base Maintenance and Support Equipment is divided into six categories. The following table portrays these categories together with funding for the fiscal years indicated.

TABLE V

OTHER BASE MAINTENANCE AND SUPPORT EQUIPMENT

($ in Millions)

	FY 1986	FY 1987	Delta
Test Equip	112.7	119.6	+6.9
Personal Safety & Rescue Equip	90.9	138.6	+47.7
Depot Plant & Material Handling Equip	51.8	54.0	+2.2
Electrical Equip	36.1	42.1	+6.0
Base Support Equip	312.5	384.0	+71.5
Special Support Projs	3,965.4	5,100.9	+1,135.5
TOTALS*	4,569.5	5,839.2	+1,269.7

* Totals may not add due to rounding.

One new start, Industrial Surge, is included in the FY 1987 request. Industrial Surge funded at $19.2 million is part of a larger Air Force effort called the Industrial Preparedness Program which ensures the defense industry is capable of supplying the required quantities of reliable systems and components in peacetime and national emergencies. The Combined Effects Munition (CEM) was selected for FY 1987. Advanced procurement of long lead items such as stainless steel strips, integrated electronic circuits, bomblet explosives, and FZU-39 sensor units will accelerate CEM production by one-third or over 4800 units, and reduce production leadtime from 18 to nine months.

Test Equipment

The Test Equipment category provides a wide range of common electronic test equipment used throughout the Air Force to calibrate other test equipment and maintain a variety of combat weapon systems. Included are calibration standards and equipment, oscilloscopes, signal generators, frequency meters, and spectrum analyzers to name a few. This equipment has suffered from lack of funding and situations have developed where sophisticated systems have entered the Air Force inventory and present equipment using vacuum tube type technology cannot satisfy the accuracies demanded by the state-of-the-art weapon systems. For many items, repair parts are not available and work-around procedures, although not cost effective, are constantly being developed to ensure mission performance. Increased funding must be sustained to correct these deficiencies and provide a first rate equipment support capability equal to the specifications built into our first line weapon systems. The program also provides equipment for 130 Air Force Precision Measurement Equipment Laboratories and the Aerospace Guidance and Metrology Center at Newark AFS, Ohio. We are requesting $119.6 million to procure critical shortages and current state-of-the-art equipment.

Personal Safety and Rescue Equipment

Personal Safety and Rescue Equipment consists of chemical and biological defense equipment, life rafts and preservers, night vision goggles, and diving and marine lifesaving equipment. The Air Force is requesting $138.6 million for Personal Safety & Rescue equipment. Chemical and biological defense equipment is the largest budget line in this category with $114.6 million requested. This represents a concerted effort to counter the chemical and biological threat. It includes individual protection, $35.6 million, collective protection, $76.1 million, and detection and warning, $2.9 million, to enhance survivability and enable Air Force combat forces to operate in a chemical and biological warfare environment.

The $73.1 million in this year's request for survivable collective protection (SCPS) systems will competitively procure 144 systems. This level of funding for SCPS is essential to ensure our personnel are adequately protected against the chemical/biological threat and provide our crisis management system additional time for assessment of operational options. The FY 1987 average cost of $6,200 per individual space for these survivable collective protection systems complies with Congressional direction to reduce the cost below $20,000 per individual space through the military construction program.

Depot Plant and Materials Handling Equipment

Depot Plant and Materials Handling Equipment automates material processing at bases, air logistics centers and air terminals throughout the world. The Air Force request is $54.0 million. The mechanization equipment includes overhead monorails, driverless tractors, automatic stackers, and automatic storage and retrieval systems. Mechanized materials handling equipment helps eliminate multiple manual operations and provides improved response and simplified parts control, inventory, and maintenance. These mechanization programs require $32.4 million.

Also included in this category is the continuation of a project entitled Logistics Application of Automated Marking and Reading Symbols or LOGMARS. LOGMARS is the implementation of automatic bar code reading and marking technology to the Air Force logistics system. Budgeted at $5.5 million in FY 1987, LOGMARS is the Air Force follow-on effort to a FY 1983 Office of the Secretary of Defense sponsored productivity investment project.

The other significant program included is $16.1 million for a wide range of industrial plant equipment such as welders ($2.3 million), lathes ($1.9 million), grinders and drilling machines ($1.9 million) to support all the non-depot maintenance industrial funded activities. Much of this equipment is 15 to 25 years old, is rapidly deteriorating, and expensive to maintain. Obtaining parts is difficult. Replacement of the antiquated inventory will ensure prompt manufacture/repair of aircraft parts, thereby improving readiness and sustainability by reducing aircraft downtime and increasing aircraft availability.

Electrical Equipment

The Electrical Equipment category includes mobile electric power generators ranging from 3KW to 750KW, wheel kits, floodlights, and power distribution panels used for power distribution throughout the Air Force. Not only is this equipment used on our Air Force installations on a day-to-day basis, but it is also required by Air Force units with mobility commitments. Commercial power at deployed locations cannot usually sustain military operations and is typically of different voltage and frequency than that required to operate Air Force equipment. To ensure an adequate measure of sustainability we must continue to procure the full complement of equipment to upgrade the mobile electric power fleet. The Air Force is requesting $42.1 million for Electrical Equipment.

The majority of our current inventory of generators are nonstandard and obsolete. Overhaul costs sometimes exceed the cost of new acquisitions. For example, a 30KW generator costs approximately $15,475 to overhaul. A new 30KW generator can be procured for approximately $14,641. A 10KW generator costs between $10,500 to $11,075 to overhaul, whereas a new generator can be procured for $9630. New generators are all standardized versions approved by the DOD Mobile Electric Power Program Office thereby reducing maintenance training costs and providing tri-service usage and stockage of spare parts. These procurements comply with DoD directives regarding the replacement of the older, inefficient generation with the newer, standardized versions.

Base Support Equipment

The Base Support Equipment category is by far the broadest and most versatile. It includes a wide range of projects such as medical and dental investment equipment, tactical shelters, aircraft arresting systems, cargo pallets and nets, photographic equipment, mobility equipment, base procured equipment, Air Base Survivability measures, productivity programs, Wartime Host Nation Support, and spare parts. The total Air Force request for this equipment is $384.0 million. I will discuss some of the larger dollar programs.

The Medical and Dental Equipment portion budgeted at $143.9 million supports hospitals, laboratories, clinics, training facilities, and a global aeromedical evacuation system for which USAF is the DOD single manager. Equipment bought through this program provides sophisticated life saving and diagnostic services which are technologically advanced and compatible with that found in the civilian sector.

A critical portion of the medical and dental funds ($50.5 million) is requested to procure War Reserve Materiel (WRM) in direct support of Air Force readiness and contingency requirements. This WRM equipment provides medical support intended to return individuals to their wartime duties as quickly as possible and keep the mortality rate at the lowest possible level. A significant portion of these WRM costs are related to the procurement of four 500 bed hospitals which include hardwall and softwall shelters, power generation and outfitting equipment. The 500 bed hospitals, shelters, and tents are standard among the services.

Of the $85.8 million required for modernization and replacement of medical, dental, physiological training and Real Property Installed Equipment, $36.7 million is for radiology equipment. This equipment has a life expectancy of 10 years and was purchased in FY 1977/78 to achieve compliance with Federal Standards pursuant to radiation control for the Health and Safety Act of 1968.

Another segment of the Base Support Equipment category is Air Base Survivability. Air Base Survivability, budgeted at $22.9 million, funds equipment to enhance the survivability and recovery of air bases in a combat environment primarily with Mobile Aircraft Arresting Systems ($11.4 million) and Rapid Runway Repair Sets ($5.9 million).

Mobility Equipment, budgeted at $60.9 million, continues an initiative begun in FY 1980 to equip forces operating at austere airfields. Although the Defense Guidance directs the requirement be sized on a Southwest Asia scenario, the program is designed for worldwide force projection. Equipment is required for aircraft maintenance and operations, power production, environmental control, billeting, messing, sanitation, and general housekeeping to support the deployed force. The procurement program takes into consideration the harsh environment, limited military facilities, nearly nonexistent logistics infrastructure and unskilled indigenous labor force in the theater of employment. Tactical maintenance shelters, mobile generators and distribution systems, water purification units, portable kitchens, tents, showers, and portable hydrant refueling systems are some of the items included in the program. USCENTCOM oversees the planning and programming of requirements.

Funding for Wartime Host Nation Support is again requested in FY 1987. The program of $8.2 million will continue equipping the Air Force share of 26,000 people of the total 93,000 Federal Republic of Germany Reservists. These reservists will provide security for United States Air Forces in Europe at Main Operating Bases and four Aerial Ports of Debarkation. Increased support at 13 Collocated Operating Bases and evacuation of U.S. wounded during wartime is also part of this program.

A request for $59.8 million is being submitted for Base Procured Equipment. The FY 1987 request complies with the FY 1986 Congressional direction of changing the threshold from $3,000 to $5,000. It also redesignates the account from the FY 1986 title "non-centrally managed" to the previous designation of "Base Procured Equipment". The account provides for locally procured equipment items for all 136 air bases and 2,710 small installations. It provides the local commander the opportunity to procure a wide variety of equipment ranging from weapon system support to items required for the day to day maintenance and support of the Air Force base. This equipment varies from aircraft test equipment, to engine analyzers in vehicle maintenance, to snow plows for runway and street maintenance, to complete dining hall support for food preparation and sanitation. The FY 1987 requirement is $136.2 million, including $73.1 million carryover from prior years. The FY 1987 support for these items is only 44 percent. As a result of funds not being available, equipment must be leased or funds expended on maintenance of equipment beyond economical repair. Of the $59.8 million requested in FY 1987, $8.0 million will be used to buyout uneconomical leases. The FY 1987 Air Force Operations and Maintenance request has been reduced by a commensurate amount.

This request also includes $13.9 million for vital initial and replenishment spares parts for all the equipment procured in this budget activity.

Special Projects

Most of the projects in this final category of Other Base Maintenance and Support Equipment are classified. They generally deal with intelligence, surveillance, and countermeasures. The unclassified portion requests $2.1 million for Industrial Preparedness and $19.2 million for Industrial Surge initiatives aimed at decreasing production costs and leadtimes, and ensuring primary defense contractors surge capability. Primary emphasis in this request for Industrial Surge is placed on procuring longlead components for the Combined Effects Munition (CEM). Also included is $8.4 million for modifications to equipment bought in this budget program.

Mr. Chairman, this concludes my prepared statement.

AMRAAM OVERVIEW

Dr. **COOPER**. Mr. Chairman, we have one other short presentation we would like to make, and we can either do it in response to questions you might have on AMRAAM or proceed directly into it.

We have a film that I think will give you a feeling for exactly where we are in that program.

Mr. **HEFNER**. Why don't we go ahead and do the film and that might answer some questions.

Dr. **COOPER**. Fine. I think it will.

Brigadier General Thomas Ferguson will give the overview, Mr. Chairman.

General **FERGUSON**. Good morning. I am the manager of this program.

(Slide 23.) You will notice as the logos indicate it is a joint program between the Air Force and Navy and I have Navy personnel located with me at the Armament Division that help me in my daily job.

This is the first time a beyond visible range capability will be on our F-16 fleets. We operate under a family of missiles. MOU with our allies, and United Kingdom and Germany participate with me. The Germans intend to put this missile initially on their F-4F airplane and the United Kingdom will put it on their Sea Harrier. That is a decision coming out of their Falkland Islands experience.

The prime contractor is the Hughes Aircraft Company and Raytheon is the follower and we intend to buy the very large majority of the missiles under the forces of direct competition.

REQUIREMENT FOR AMRAAM

(Slide 24.) Requirement for AMRAAM has been visited many times. It is a solid requirement based upon these kinds of capabilities: It's an all-weather missile, operates in electronic warfare environments. It has an all aspect, launch and maneuver, launch and leave capability, and attacks multiple targets simultaneously, takes advantage of the most up-to-date features of the radars on our attack fighters, has better aerodynamic performance, and is 30 percent better than our SPARROW missile. We are trying to assist people in the field.

(Slide 25.) The next chart I have tried to capture the essence of the AMRAAM payoff and point out why we need AMRAAM.

SPARROW is a very capable missile, and it is our current medium-range missile. Our launch aircraft, however, are required to focus on only one aircraft at a time and they must continuously illuminate that target with their radar after we have launched the SPARROW.

During the periods of time the missile closes on the target, the aircraft also closes and where we fight outnumbered, we get to the point where we become vulnerable to their medium-range missiles launched by accompanying aircraft or by short-range missiles being carried by the intended target.

As a result, in an exchange rato basis, we look, and that is a situation that derives, of course, from being outnumbered in the Central European and engagement scenarios.

With AMRAAM, we retain the opportunity to fire first, but now we can launch against multiple targets and because we have an active radar feature, we can depart once our missile has gone active, we stay outside the range of their lethal missiles either medium or short range.

Mr. **Murtha**. What is the number of crew in that airplane, two or one; one person, and that radar is so sophisticated, it can figure out four targets and fire those things and he is still flying the airplane?

TRACK-WHILE-SCAN CAPABILITY

General **Ferguson**. Yes, sir.

We are working right now with the F–18 in a track-while-scan capability. It is a very effective weapons system.

I might refer you to a Top Gun Journal published by the Navy where they talk about AMRAAM and what it will do for the Navy fleet capability. It is called "Looking Forward to AMRAAM."

Dr. **Cooper**. We had a lengthy discussion yesterday on the price of the F–16 and the difference between the F–16C and the F–16A. The primary difference is in the radar of the F–16C called APG–68, and it is that radar that gives you the capability to track while you scan and to simultaneously prosecute the number of targets.

Mr. **Murtha**. Is this a very expensive radar?

Dr. **Cooper**. More expensive than the current radar. It runs to about $800,000 a copy more than the current radar, but I think it is a very intelligent thing for the Air Force to do because it now gives the F–16 an all-weather, all-environment capability that it has not had before. It is a relatively modest cost to pay when you look at the return on that investment.

[Slide 26.]

General **Ferguson**. This missile is smaller than the SPARROW, one inch smaller in diameter. SPARROW weighs 500 pounds and AMRAAM 335 pounds and that makes us a much better missile to match up with smaller airplanes such as the Sea Harrier and the F–16, as an example.

The key feature was the active transmitter, a full radar packaged into the front end of the missile, and a very effective warhead, a rocket motor that produces very little smoke signature and the missile is tail controlled which gives it much greater agility than SPARROW has.

The program has been through rather substantial scrutiny by the Secretary of Defense and a study he commissioned that completed in midyear, last year, looked at the missile from the point of view of were there any alternatives that could be made available in the same time frame, that AMRAAM will become operational, and the answer was no.

Likewise, the second part looked at ways to reduce the cost of this missile. Indeed, there were ways identified to be able to do that and we have packaged that into a producibility enhancement program. Initial funds were authorized last year and we are now underway with that program.

AMRAAM STATUS REPORT

A status report about four minutes, and if you would run that now for me, please.

It starts out with some warhead tests conducted at the Armament Division against a fuselage that has not been subjected to any prior tests, and you can see the missile is propelled into the arena, detonated at that point. There are wing panels on this side and you can see it. These tests are conducted to qualify the warhead. Those tests have now been completed, extensive damage can be seen.

This missile was detonated outside the normal distance, we expect; a very, very effective warhead. The rocket motor has 48 successful firings.

There is a chassis being manufactured in the Tucson facility of Hughes Aircraft Company and 40 percent have been built and tested on automated test stations such as the one illustrated here in this part of the film. Thirty-two of these tests stations are now approved, in use, and checking hardware.

The heart of the missile is an electronics unit shown here which is composed of eight of those chassis and circuit card assemblies.

We have now completed about 30 percent of the build of all of these items in the development program. This is that electronics unit, making up the front end of the missile called a Seeker, tested in an open configuration, put through a screening operation, and finally the missile is tested.

Twenty percent of all missiles in development have been accepted. A similar facility to the one you see here is now located at Raytheon's Lowell manufacturing facility and they have been provided by Hughes and training is complete on that piece of equipment.

Captive testing: this is a piece of AMRAAM equipment, AMRAAM ACE pod being flown on the F-15 in this case. We have flown now almost 100 sorties with this airplane. ACE equipment is used to evaluate the hardward and software. We have initiated flight tests with the Navy on their F-18, and this is an improved version of that ACE pod. This is taken at the Navy's Pacific Missile Center.

Once again this captive equipment is proving to be an excellent development tool. Environmental testing: we take up the missile and see how well it interfaces with the airplane and the loads and flight environment. We have completed this testing on the F-16 and the F-15 and we are 75 percent complete with the F-18 with all testing satisfactory.

This is carrier suitability testing, the missile is on the aircraft at landing, and those tests completed and totally satisfactory.

We are concerned about how this missile will perform in the field and we have done maintainability demonstrations. Here is the missile loaded out of a shipping and storage container with a one-step loading adapter. This crew uploaded four missiles on to the F-15 in 22 minutes, one minute less time than today to do a combat turn with the SPARROW.

Here, uploading four missiles on the F-18 in 11 minutes with the requirment being 15 minutes.

AMRAAM LAUNCH CAPABILITY

We have gotten good comments from all the ground crews that have handled these missiles and they are very complementary of the equipment. Three guided lanuches have been completed to date. The first was off of the F-16, the missile separates smoothly off the rail. In this case, the missile went active immediately after launch. This is the missile in flight.

The missile passing over the left wing of the QF-100 drone would have been lethal had we had a warhead on board.

Second missile launched off a F-15, a lookdown/shootdown shot in severe clutter done at Holloman, and you are looking through the HUD on the F-15. As we are developing a missile we are also working interfaces with our combat aircraft.

You saw the missile launch, in real time it gets away very rapidly and these launches are shown to you in slow motion. Notice how smooth and clean burning the rocket motor is. That was one of our development objectives which we have achieved very nicely.

Third guided missile launched off of the F-16. This was a case where we actually updated the missiles' guidance package through the radar on the F-16, a command inertial active mode of the missile.

Once again, a nice smooth launch, and the missile acquired the target, and in this case, resulted in a direct hit on the target drone.

I will go back and make a few comments because the film goes fairly quickly.

You can discontinue the film now.

The F-15 launch that we made, we launched from just under ——— nautical miles in a tail-chase mode in a lookdown/shootdown kind of situation, a difficult shot for early in a development program.

We launched at about 80 percent of the maximum aerodynamic range of the AMRAAM. This is a shot—for one thing, the pilot coud have fired the missile and maneuvered. The missile was on its own from the moment it left the rail. The SPARROW could not duplicate that shot.

The F-16 shot that we took of course, was launched from about ——— miles. We did update the missile for approximately 10 seconds of its flight and then the radar went active.

However, that was a shot where the target was not maneuvering; in that case, once again the piiot probably did not need to update the missile at all. He could have once again launched and maneuvered. These were very demanding shots, very encouraging to us that the missile is going to perform in accordance with our expectations.

AMRAAM FUNDING

(Slide 27.) The last chart talks to funding on the program. As far as development is concerned, about 90 percent of the development funds have been authorized and appropriated. The balance of the funds we are requesting in fiscal year 1987 and 1988 are to evaluate the missile.

The Hughes contract is fully funded with prior-year funds, so no additional funds are required on that contract.

This is to evaluate a missile in the field, and most of these costs are supporting government activities and not contractor activities.

As far as production, fiscal year 1987 is the first year to put the missile into production, low-rate initial production, 260 missiles. We intend to buy 140 from the Hughes Aircraft Company and 120 from the Raytheon Company.

One more production year where we have directed splits and then we are into full competition where 95 percent of the missiles we intend to buy are under direct competition.

That would conclude my comments, Mr. Chairman.

[CLERK'S NOTE.—The slides used by General Ferguson during his presentation follow:]

AMRAAM
AIM-120A

DEPARTMENT OF THE AIR FORCE · UNITED STATES OF AMERICA
DEPARTMENT OF THE NAVY · UNITED STATES OF AMERICA
H6YM0008

Slide 23

UNCLASSIFIED

A SOLID REQUIREMENT

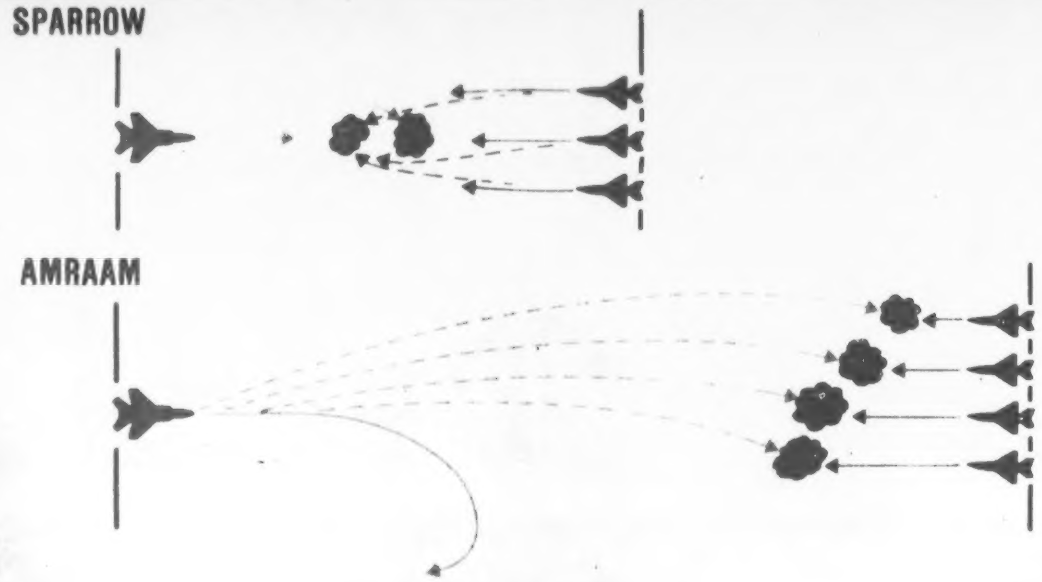
- ONLY AMRAAM CAN SATISFY THE NEED FOR:
  - A COMMON MISSILE (AF. NAVY. NATO)
  - AN ALL ENVIRONMENT CAPABILITY
  - AN ALL-ASPECT CAPABILITY
  - AUTONOMOUS TERMINAL GUIDANCE (LAUNCH/MANEUVER)
  - SIMULTANEOUS ATTACK OF MULTIPLE TARGETS
  - IMPROVED AERO PERFORMANCE
  - SIMPLIFIED MAINTENANCE. LOGISTICS. AND OPERATIONAL CONCEPTS

G6YM0084

UNCLASSIFIED

UNCLASSIFIED

THE AMRAAM PAYOFF IN A NUTSHELL

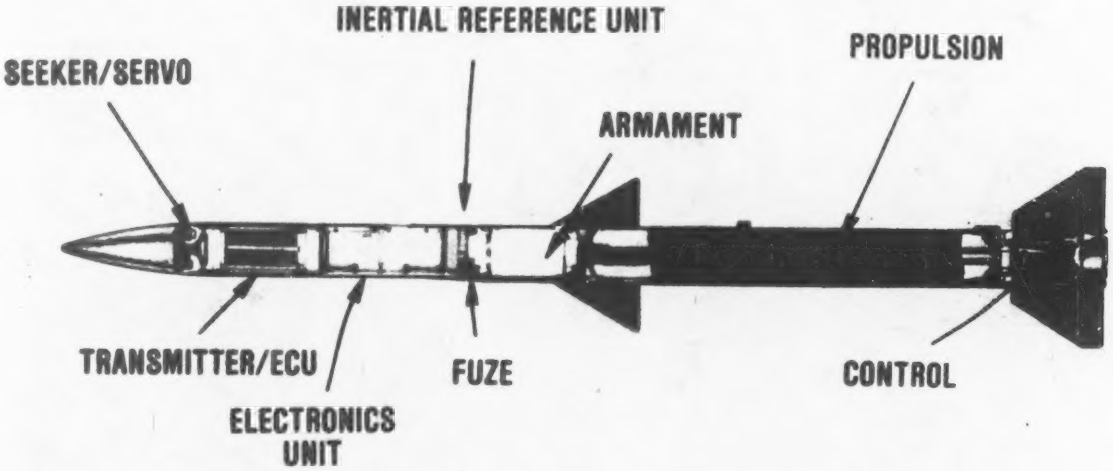

SPARROW
AMRAAM

UNCLASSIFIED

P6YM0099

Slide 25

AMRAAM


INERTIAL REFERENCE UNIT
SEEKER/SERVO
PROPULSION
ARMAMENT
TRANSMITTER/ECU
FUZE
CONTROL
ELECTRONICS UNIT

Z5YM0300

ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM) (AIM-120)

($ IN MILLIONS)

	FY 85 & PRIOR	FY 86	FY 87	FY 88	TO COMPLETE	TOTAL
RDT&E	819.0	101.3	39.1	13.0	—	972.4
WPN SYS PROC	101.5	209.0	746.5	996.2	4812.7	6865.9
QUANTITY BUY	—	—	260	833	16.015	17.108
DELIVERIES	—	—	—	88	17.020	17.108

* FOLLOWER QUALIFICATION MISSILES

FY 87
RDT&E REQUEST
$ 39.1

• FLIGHT TESTING	12.0
• PSE	8.3
• A/C CONTRACTOR SUPPORT	7.8
• OTHER GOVERNMENT SUPPORT	6.9
• FOLLOWER CONTRACT	3.6
• SMALL CONTRACTS	.5

FY 87
WPN SYS
PROC REQUEST
$ 746.5

• FLYAWAY	695.2
• ADVANCE BUY (CY)	89.9
• ADVANCE BUY (PY)	59.4
• DATA	8.8
• PSE	7.3
• TRAINING EQUIP.	4.7

SCHEDULE

• FOLLOWER QUALIFICATION	FY 86
• BEGIN LOT I LRIP	FY 87
• IOC	FY 89

Slide 27

EVALUATION PHASE INFORMATION

Mr. Young. General, the presentation you have just made is very positive and sounds really good. Could you talk for a couple of minutes on some of the problem areas you still have with AMRAAM.

General Ferguson. I would begin by saying we are still early in the evaluation phase. We have had five launches all together. The last occurred on Friday of last week, and that was where we launched the missile without the active feature of the radar, called the separation control test vehicle, and it maneuvered in low altitude, high dynamic pressure environment and demonstrated we could pull ——— in excess of Mach 3. The missile worked very well, but it is still early in the program. We intend to have 90 guided launches in the program and we have only accomplished three, yet the results are very encouraging at the present time.

We have experienced some problems getting to the point we are at right now. We have had a number of cases where we have gone out with the missile and attempted to launch and the missile aborted.

That is disappointing, but we have always brought the missile back. The missile has always done the job it is meant to do, self-checked itself, and we have been able to identify all of the problems where we have had those aborts, and they are not significant problems, and we have fixes for all of these.

The program got behind initially and caused us to have to go back and replan because, I would say, we were just overly optimistic in the packaging problem we have, putting the radar into this kind of cylinder and that problem has turned out to be more difficult. It takes very sophisticated equipment to check the missile in its factory and that likewise took longer to develop.

DEVELOPMENT PROGRAM

Dr. Cooper. Mr. Young, as you might recall, we were faced with a production decision two years ago, just about this time, in fact two years ago in January, and originally the program that was put on the books had a 50-month, full-scale development program. I remember being here with General Russ at the time and we told you that we did not think it was going to be possible to execute those production options and in fact we did not.

That caused us to lose the fixed-price production contract option that we had gained in a competitive environment way back when. We have had two competitions on AMRAAM already and we are about to have a third. This program now has been on the books for ten years.

I joined the staff of the House Armed Services Committee about ten years ago and that is when AMRAAM got started, and we started out with five contractors competing. We down selected to two and that was Hughes and Raytheon and they went into a pre-FSD phase, and Hughes won that and proposed a 50-month development contract and we later brought Raytheon on as a second source and two years ago, we concluded we were not ready to go into production.

We were not experiencing technical difficulties per se, nothing that we found fundamentally wrong with the missile. It was just taking longer to get through the development process than we had anticipated.

Actually the thing that drove the schedule for AMRAAM was a perceived need in Europe, to deploy F-16s in Europe with an AMRAAM, and that is what drove the programmatic schedule because we had planned to draw back the F-4s out of Europe and replace them with AMRAAM-capable F-16s. The program was just too ambitious.

We have now restructured that program, and we briefed the committee on that last year and I remember standing where General Ferguson was, answering some of your questions. We had the blue ribbon committee. That FSD program is not 79 months, in line, still an ambitious program, but one we can do.

It is more appropriately paced than when it was a 50-month program.

The real issue with AMRAAM is in the building and has not been with whether or not it will work. Mr. Murtha, this is a very impressive set of tests when you look at what this missile has already done. We have launched five to date and two have been stressing shots.

The history of the AIM-7s showed that missile was operational for a long period of time and we are still having problems with that. The AMRAAM missile at this point can do what the Sparrow today can't do, so we have every reason to believe it will work.

The real issue was the thing is going to cost too much and that is when Mr. Weinberger dismissed us from the room, and said if you can't get the costs under control, I am not going to go forward with it.

AMRAAM PRODUCTION

Mr. YOUNG. I understood the general to say there had been three shots.

Dr. COOPER. Three guided.

General RANDOLPH. Three of those were guided shots. Two were stability and control shots; that is, the active radar was not working.

Mr. YOUNG. You have 90 planned and you have fired 5 or 3 with the guided, but you are asking for production funds now. Is that a little bit early?

Dr. COOPER. No, sir. I don't believe it is early. We have been in development for ten years on the program. We have the low rate production funding in hand at present and our current program would have us begin low-rate production some time in the summer and with a release of the production funding itself sometime later next year.

For the first set of missiles, we are only building 260 and those will be split, 120 to Raytheon and 140 to Hughes, and at some point, you have to start a production line to get missiles of production quality.

That production will certainly be contingent upon Hughes passing a production readiness review which we will perform in the not-too-distant future and Congress has asked for the result of the production readiness review which we will submit, but I do not believe it is too early.

Mr. HEFNER. Let me ask a question, not being very knowledgeable about this, but as someone who has wrestled with the budget to try to find an extra $10 billion. The information I have is that for three years you have said you were ready to go to production.

Dr. COOPER. Oh, no, sir.

Mr. HEFNER. You have asked for procurement money.

Dr. COOPER. We have not spent the procurement money.

RESEARCH AND DEVELOPMENT REQUIREMENT

Mr. HEFNER. Let me finish my question.

Secretary Weinberger has submitted a certification, February 28, 1986, concerning AMRAAM. He certifies that the design is complete. You are asking for $39.1 million in 1987 for AMRAAM research and development.

What is different from last year, when the projected FY 87 research and development requirement was $1.1 million? What has changed?

General RANDOLPH. Last year the request in R&D was $101 million, and this year the money that we got in the budget is primarily for testing. The missile has been designed and we have to evaluate, go through the test program just discussed before we begin the low rate initial production, we anticipate we will have completed 33 tests which is about a little bit more than one-third of the way through the test program, but the reason for going to low-rate initial production is we want to assure that we have production quality missiles to go into the actual operational test program which provides the data that Mr. Kring needs to give the Secretary the evaluation necessary to begin full rate production. It is very critical we move into this production in fiscal year 1987.

Dr. COOPER. Last year, we spent an extended period of time on the program before the subcommittee and we told you at that time that we were in the process of restructuring the program. I wasn't even sure Mr. Weinberger was going to allow the program to go forward.

As the year developed last year, we restructured the program. In fact, the Congress removed, and we offered up, some of the production money during the process. What we were left with was long lead funds which we currently have in hand.

The total R&D program has gone down in costs over the last year. We are asking for more in 1987, but in 1988 and beyond it is less than we were asking for. I don't think that is really a significant point that we are trying to make.

In point of fact, the majority of the R&D funds have already been authorized and appropriated.

Over 90 percent funded right now; the bulk of the R&D funding is behind us. We have got a fixed-price type contract with Hughes Aircraft for $556.7 million, and we estimate that Hughes is going to spend over $200 million of their own money to complete FSD. They are doing that with the expectation that there is going to be a production program.

Mr. **Young**. Their own money?

Dr. **Cooper**. Sir, that is their own money.

COST OF AMRAAM PROGRAM

Mr. **Hefner**. How much have we spent on this program? We may as well talk about this now. How much have we spent on this program to date?

General **Randolph**. Mr. Hefner, may I quote from the selected acquisition report, and in doing so, I will give you two numbers, the number from the December 1982 selected acquisition report, and then I will give you the number from the December 1985 report just submitted to us.

In December 1982, the then-year total development cost was $951 million for this program.

In December 1985, the total then-year development cost was $971 million, or a difference from December of 1982 to today of $20 million, a $20 million total increase in the development costs.

In the production numbers in December 1982, the then-year dollars for production of 17,000 missiles was 6960; that is, $6,960,000,000, and in then-year dollars.

In December 1985, the production cost of 17,000 missiles was $6,967,000,000, or a difference of $7 million between 1982 and 1985. The number went up in between and Mr. Weinberger said, "Come back down."

Dr. **Cooper**. We have got $900 million plus or minus a few bucks in hand.

Mr. **Hefner**. I want to know from the inception of this program: How much money have we spent up until the request for 1987?

Dr. **Cooper**. Mr. Hefner, we will get you that number very precisely. From the full-scale development program, we have been authorized and appropriated roughly $900 million.

General **Ferguson**. Our government termination liability on the program for R&D as of the 15th of February was $902 million. In other words, that would be——

Mr. **Chappell**. Everything?

General **Ferguson**. Yes, sir; in R&D, and a very small amount of production funds that have been associated with the Raytheon qualification program of $23.3 million.

[The information follows:]

Prior to the FY 1987 request, approximately $717 million had been expended for AMRAAM development.

IMPORTANCE OF AMRAAM

Mr. **Hefner**. OK. Let me ask another question. I am trying to set some priorities.

Gramm-Rudman-Hollings is a fact. It is also a fact that the best we are going to get on a total defense budget is somewhere close to a freeze, plus maybe inflation. That is what you have to be thinking about.

How high a priority is the AMRAAM program? How high a priority is this for the Air Force?

Dr. **Cooper**. Let me answer from my point of view and then let General Randolph answer. It is about as high a priority in the Air

Force as we have today, and I would not cut AMRAAM almost under any circumstances. You can certainly conjure up a budget profile where we would have to cut it, but most programs in the Air Force I would cut before I would cut AMRAAM. This is a critical program and let me tell you why.

In the mid-nineties when this missile starts to come into our inventory in numbers, we will have about $100 billion worth of F-15s and F-16s on the ramp. We think we have had the competitive edge over the adversary, even though we have fewer numbers because of the capability of our machines, sensors and missiles.

The Soviets are improving their sensors and air-to-air missiles. We think it is imperative that we maintain first look and that we get from our radars, and first shot and first kill, which is what we get from the missiles.

To invest $7 billion to $8 billion, which is what we are talking about in then-year dollars for the AMRAAM, to maintain that competitive edge and to leverage that $100 billion force is a wise investment.

To put it another way, we would be foolish and extreme not to buy the weapons to go on the fighter aircraft that we currently have on the ramp. That is why I say in my mind's eye, AMRAAM is an extremely high priority.

NAVY AMRAAM BUY

Mr. **Hefner**. But we are going to get to a point where you are going to have to set some real tough priorities.

We are going to have 17,000 missiles, and supposedly at a cost of $5.2 billion, but an attachment to that letter says we are only going to get these missiles if, in addition the Navy buys 7,000 missiles at $1.8 billion.

Dr. **Cooper**. Yes, sir. That is our program. It is joint.

Mr. **Hefner**. Yes, I know.

Did the Congress know that when we got your proposals? Were we told that this hinged on what the Navy did?

Dr. **Cooper**. That is one of the contingencies in the certification.

Mr. **Hefner**. What will the 17,000 missiles cost us, if the Navy doesn't participate? The second part of the question is, what means exist to require the Navy to buy AMRAAM?

Dr. **Cooper**. Let me answer the second part first because I don't know the answer to the first part.

Mr. **Chappell**. Like your negotiation on the golf course.

Dr. **Cooper**. Exactly.

Mr. Young. On the 17,000 figure, does that include the NATO procurement?

Dr. **Cooper**. No.

General **Randolph**. No, only U.S. Air Force procurement.

Dr. **Cooper**. We have actually capped the total buy of 24,000, and that is what Mr. Weinberger has done. The way the law was written it only addressed the Air Force portion of the buy, but I would like to stress that this program is joint in nature.

Weinberger has said he is capping the entire buy of 24,000.

Mr. **Young**. Does that include the Navy? NATO?

Dr. Cooper. Not including NATO, but the combine Air Force-Navy buy is 24,000 in 1984 dollars. We put a $7 billion cap on that combined buy.

As a subcap, there is a $5.2 billion cap on the 17,000 missile Air Force buy so, yes, the answer to the second part of your question is, us being able to bring this program in at $5.2 billion assumes that the Navy stays in it.

As you get out into the production run, the Navy missiles and Air Force missiles are interleafed and we are buying both in similar years, so if you jerk those out, I don't know what it will do to your costs.

NATO PARTICIPATION IN AMRAAM

Mr. Young. If the NATO buy is included, would that bring the unit cost down?

Dr. Cooper. It could. It would depend on whether they want to co-produce the missile. The certification is not contingent upon NATO participation.

Mr. Hefner. They wouldn't bring the price down until you pass that 24,000?

Dr. Cooper. Oh, no.

CONSOLIDATED PROGRAMS

Mr. Hefner. Is the Navy at this point thinking about something that is——

General Randolph. May I address that question?

The Navy is absolutely sold on this program.

Mr. Hefner. Wait a minute.

General Randolph. The Navy is sold on this program. The Navy is part of the test team. His deputy program manager is a Navy person. When we went through the discussions prior to getting to Mr. Weinberger, the Navy actively supported this program, the discussions, so the Navy, as far as I know, at all levels I deal with, the Navy is 100 percent on board this program.

Dr. Cooper. It is a big Navy and a big Air Force. You can hear all kind of rumblings.

I think it is critical when Mr. Weinberger certified it and put the $7 billion cap on it—he also runs the DOD and what General Randolph and I both are saying, the Navy is in the program.

Last year on the Hill, there was money added to start work on the tail-controlled Sparrow. My own view is that is fine, we can do work on a tail-controlled Sparrow, but it is absolutely essential that both the Air Force and the Navy stay together in this program.

Mr. Hefner. It is a big, old Air Force, a big, old Navy, but there is a little pot and the pot of funds gets smaller and smaller. There is going to have to be, there has to be some commonality in these things.

We are getting past the point where everybody can go off and do his own R&D.

That is the thing that concerns me.

Dr. Cooper. There is always the desire when you get outside the headquarters for each service to go off and do its own thing, but that is the challenge that the management has. I am not going to look you in the eye and tell you there is not some guy in a dark blue suit that wouldn't like to go off and do his own thing or in a light blue suite, but it is imperative that Weinberger certified that $7 billion. That ensures the Navy has to stay in.

General RANDOLPH. The critical issue, it is my view, and a view that is held through the Air Force, that if this missile is so critical, if you kill the AMRAAM as currently existing, we would have to restart, and start all over again and redo the program because there is no doubt in my mind that the loss of AMRAAM is a loss of considerable capability which we cannot allow to happen, so you would have to start the whole program all over again in order to get back to AMRAAM, so I don't see any reason why you would want to stop it at this point.

SOVIET THREAT

Mr. YOUNG. We need this system very much. Would this be a good point to comment on what the Soviets are doing in a medium-range missile, that makes it so essential for us to have something like this?

General RANDOLPH. Tom, do you want to talk to that?

General FERGUSON. I don't want to speak as an expert as far as the intelligence community is concerned.

I received briefings and it is indicated ———.

Mr. YOUNG. How many years?

General FERGUSON. We are looking for an IOC with this missile in 1989, and the estimates I have seen show the ———.

Mr. YOUNG. That is not a lot of lead for us.

General FERGUSON. No, it is not.

Mr. YOUNG. Are we going to find ourselves back on that upper chart that you have, where the 3 to 1 was against us as opposed to being in our favor with AMRAAM's capability?

General FERGUSON. Well, I think that is where we have a headstart, because of the avionics on board all the aircraft that AMRAAM is going to marry up with and our ability to take advantage of the capability of AMRAAM, will continue to give us an edge well into the next century, but it has to be a weapons system capability.

ANTICIPATED THREAT

Mr. YOUNG. What about their ability to jam those new radars?

General FERGUSON. We have mechanized AMRAAM in anticipation of the threat. We updated the threat, and documentation is part of the review process we went through with Mr. Weinberger, and we are confident, as we preceive the threat in the time frame, we are going to be fielding a missile that will be able to handle that electronic warfare environment.

Dr. COOPER. That is none of the key features of AMRAAM you don't see, electronic counter-countermeasures.

Are we ready for production and why are we requesting moneys? We believe we will be ready to go into production, long lead this summer and we have those moneys in hand from last year and hopefully to go into production itself, about the April time frame next year.

I want to assure that committee though that we will not go into production if we have not met the production criteria we have set for ourselves, and we have had that challenge before and we didn't go into production. We have come forward to the committee at each instance and told you, we are not ready to go into production, and I know of no other program in the DOD that is under more scrutiny internally than AMRAAM.

Mr. Weinberger has put his signature on a piece of paper saying he certified these things and he will continue to look over our shoulder.

Mr. Young. You have not taken over from DIVAD?

Dr. Cooper. I believe Congress levied some conditions on Mr. Weinberger on DIVAD and on that particular case he did not choose to go foreward, so in this situation, we do not think AMRAAM is a DIVAD. It is a cost issue right now, an affordability issue, back to your question. Given some pretty tight budgets, AMRAAM is fully funded in our budgets right now and I like the cap in one sense in that I think it will give the program stability, and that is á lá the B-1, if you have that program and the design is sound, we bring it in at the cost we told you.

Mr. Young. The Air Force and the Navy need this kind of a weapon?

Dr. Cooper. Absolutely.

Mr. Miller. Would the gentleman yield?

Mr. Young. Surely.

AMRAAM VERSUS SOVIET MISSILE

Mr. Miller. While we are on this particular subject, I would like to clarify, if I might, an issue raised in the speech in April of last year. Assistant Secretary of Defense for C^{3}I, Donald Latham said, "We are trying to field AMRAAM, at an increadible cost, while the ---."

Are we up to the state of the art with AMRAAM or should we go back to the drawing board? The gentleman made that statement and I would like for you people to clarify, if you can, what he meant by that. He was in a position to know what the Soviets have, and he made that statement.

General Randolph. I read the article, and I have not had a chance to talk with Mr. Latham, so I don't know the context of that statement and whether he was accurately quoted, but as General Ferguson has just noted, we have no evidence to support that statement. There is no data that is available to us that says that the Soviets have such a missile today.

Dr. Cooper. I find that an incredible statement if Don Latham made that.

The AMRAAM that the Soviets are developing is an increased capability over what they have now, but from what I have seen, the AMRAAM that they will field in ———. We will take that back and I would like to chat with Don.

Dr. Miller. Could you clarify that for us?

Dr. Cooper. Sure will.

[CLERK'S NOTE.—Classified slide removed.]

Mr. HEFNER. Mr. Murtha. We have a vote on the journal, and will return shortly.

MX PROGRAM

Mr. MURTHA. Mr. Secretary, I happen to agree with Mr. Hefner, this is going to be a tough year. The Air Force wants every program and the AMRAAM, I have been a supporter and I offered the amendment to put some of the initial money in because the Speaker was interested in it and I have been a supporter of it ever since this subcommittee has.

It is a lot of money, and we have a lot of programs this year.

The MX, which is another program the Air Force has, requested $1.42 billion to procure 21 MX missiles. A total of 54 missiles have already been funded for procurement in the three years of fiscal 1984 to 1986, following a total of 20 R&D missiles.

The stated policy of the Congress is to allow deployment of 50 missiles in Minuteman silos.

Has the Air Force altered the MX program plan to reflect that fact?

Dr. COOPER. Yes, we have, and our current plan is to deploy the 50 missiles, operational missiles that Congress has provided. We are right now within a one-year from operational capability of the first ten operational missiles. The missiles we are requesting this year are test missiles. We need a total of 123 test missiles, to maintain the efficacy of that force.

Mr. MURTHA. Is that what your documentation shows?

Dr. COOPER. Right, and the issue of the second 50, where we go from here, Congress said that we could not deploy the second 50 in Minuteman silos.

Mr. MURTHA. How many do you intend to deploy?

Dr. COOPER. Our long-term goal is to deploy 100 operational MX missiles and we are due to reach a decision point late in the year on a preferred survivable basing mode for MX and at that point, if we come up with one, we will be back to the Congress with a proposal for additional operational missiles.

SILO MODIFICATION PROGRAM

Mr. MURTHA. Where are you in the silo modification program?

Dr. COOPER. Modifying the 50 silos, I believe they are being modified as these missiles become available. We have started to deploy the operational missiles in the silos.

Mr. MURTHA. The silos are staying ahead of the missile. What you are doing, the missiles come on line, and you have the silos?

Dr. COOPER. Right.

General RANDOLPH. That is correct. We will have 10 modified by December of this year and that will be the initial operational capability.

Dr. COOPER. We are on schedule there, and they are measured together.

ALTERNATE BASING MODES

Mr. **Murtha**. Now, the Air Forces says that an alternate basing mode to Minuteman silos is being explored to deploy 50 more MX missiles.

What are those modes?

Dr. **Cooper**. We are looking at eight different concepts right now to include hardened Minuteman silos, carry hard, and a shallow tunnel mode, deep underground, eight different modes that are being examined.

Mr. **Murtha**. Also looking at a mobile type?

General **Randolph**. Yes, sir; rail mobile, road mobile, super hard silos, and super hard silo with deception. Those are the eight modes.

Mr. **Murtha**. I supported that concept because I felt that they certainly are vulnerable, no matter how much we try to harden them. You have examined those things, though, how many times? Why are we back? What has changed now to put you back into examining—and I know you didn't change your mind; it was Congress.

What has changed around here that makes you think we can now go to the mobile missiles?

Dr. **Cooper**. I don't know that that will be the recommendation that we come back to you with. Right now, as I say, we have eight options that we are looking at. That will ultimately be knocked down to one. I don't know what that final choice is gong to be. It may be some combination of mobility and hardness and deception.

General Randolph. There is additional technical progress, technical information that we can bring to bear on the problem. In the area of super hard silos, we have learned that we can actually make silos considerably harder than we originally believed, so that is new technology.

We need to bring that into the equation and evaluate that.

MX PRODUCTION RATE

Mr. **Murtha**. The Congress last year instructed the Air Force to budget for between 12 and 21 MX missiles for fiscal year 1987, depending upon the most efficient production rate. As noted above, the Air Force has requested the maximum number of 21 missiles.

Is 21 in fact the most efficient production rate? What specific analysis was made to support that conclusion?

Dr. **Cooper**. Forty-eight per year is the most economic production rate. We are tooled up to produce 48 per year, but given the constraints Congress livied on us, when you look at 12 or 21, the most efficient rate allowed is 21, and that is about a 25 percent reduction in unit cost, versus going to 12.

Mr. **Murtha**. Give us a comparison between 21 and 12 for the record.

[The information follows:]

The flyaway unit cost of 21 missiles in FY 87 is $52.5M. The flyaway unit cost of 12 missiles in FY 87 is $65.3M, a 26 percent difference.

Mr. **Murtha**. What funding would be required for MX procurement in FY 1987 if the quantity were held to 12 missiles? Explain how that figure is derived.

[The information follows:]

The funding requirement for 12 Peacekeepers in FY 1987 is $1,154 million. A breakout follows:

[Dollars in millions]

Flyaway	$784
Other weapon system	106
Support	209
Initial spares	55
Total	1,154

Mr. **Murtha**. If you will, please, answer the questions on 30 millimeter armor piercing ammunition for the record and send me a copy of that, as I would like to understand that issue more.

Dr. **Cooper**. We will answer those for the record and see that you get a personal copy.

[**Clerk's note**.—Questions submitted by Mr. Murtha and the answers thereto follow:]

30MM ARMOR PIERCING AMMUNITION

Question. Last year, Congress appropriated $30.613 million for procurement of 30mm armor piercing ammunition. The appropriation language stipulated that the penetrator must be procured through component breakout. What are the Air Force plans for complying with this requirement?

Answer. We intend to comply with the Congressional language and have instructed the Army Single Manager for Conventional Ammunition accordingly.

Question. Why did the Air Force recently decide to eliminate this fiscal year 1986 procurement and use the funds instead for assistance to the Contras?

Answer. The Air Force was asked by the Office of the Secretary of Defense to identify $35 million from within the FY 1986 ammunition procurement account to fund Nicaraguan aid. The 30mm API program absorbed $29.1 million of this cut; the amount remaining after application of the Gramm-Rudman reductions. Based upon the Congressional direction to breakout penetrators, the Single Manager for Conventional Ammunition (SMCA) had to revise its FY 1986 acquisition strategy. This resulted in an eleven month contract delay due to the need to develop a penetrator data package. Thus, 30mm API reduction was deemed to have the least overall impact on sustainability levels, FY 1986 program execution and FY 1987 funded deliveries.

Question. What acquisition strategy will be used for the $40 million procurement budgeted in fiscal year 1987?

Answer. Unless Congressional direction is rescinded, the Air Force will require the SMCA to breakout and compete the penetrator and provide it to the two competing 30mm sources as Government Furnished Materiel. In conjunction with the Single Manager for Conventional Ammunition a data package is being developed and qualified for this procurement.

Question. What is the procurement profile for this ammunition for the next five years?

Answer. As shown in our FY 1987 budget back-up documentation the Air Force currently is not planning to procure 30mm API after FY 1987. This is driven by significantly lower fiscal levels and the fact that we have been very successful in building inventories for this item to levels much higher than for any of our other modern munitions. Corporate Air Force priorities call for application of limited resources to build up lower inventories of other items. These decisions are reviewed annually by both Air Force and Department of Defense leadership in conjunction with sustainability assessments and industrial base responsiveness. Continued procurement of the training round, however, is programmed at approximately seven million rounds per year over the next five years. Except for the penetrator, the training round will sustain the production base.

[CLERK'S NOTE.—End of questions by Mr. Murtha.]

AGM-130

Mr. Hefner [presiding]. The Air Force is requesting $26.6 million for procurement of 51 AGM-130s, a rocket-powered version of the GBU-15 glide bomb. Last year, the budget request of $48.5 million for 97 units was reduced by the Congress to $20.0 million for 40 units because a production decision was not scheduled to be made until the third quarter of fiscal year 1986.

Last year we asked why procurement funds could not be deferred. The Air Force replied, in part, that the AGM-130A would be ready for production in the third quarter of fiscal year 1986, and that "the AGM-130A is simply a product improvement to the GBU-15, a weapon system already in production."

Why was the critical design review postponed?

General RANDOLPH. The Air Force's position that it was a modification to an existing weapon was, of course, correct. However, as it often happens, we ran into some problems, and the problem was with the rocket motor, Mr. Hefner. We had originally decided to qualify the rocket motor at minus 55 degrees, and, of course, when you are flying an airplane at altitude the temperature can reach close to minus 55 degrees. Every time we tried to qualify the motor at that temperature, it failed.

When we did the proper measurements within the real environment of the friction that occurs under the airplane, the lowest temperature was minus 40, so therefore we have changed the requirement to minus 45.

In doing that, we have now gotten the rocket motor back into position where it should be, but that caused us a six- to eight-month delay while we worked that problem and we are now in the process of working the program whereby we would take the $20 million that you gave us in fiscal year 1986, use that for set-up and tooling and the monies we are asking for in fiscal year 1987 would begin the production of the AGM-130 missile.

Mr. **HEFNER**. It was just not a simple product improvement, but got pretty involved?

General **RANDOLPH**. Simple product improvement, but I will have to say that our understanding of rocket motors continues to be a problem. We thought we could fire rocket motors at those low temperatures and we couldn't.

We found out we really did not need to do that That was an excessive requirement and we have since fixed that.

Dr. **COOPER**. You take the basic GBU-15, put a radar altimeter on it, put a booster to power it and provide a data link.

It is in that booster area we have experienced the problem.

Last year when the funds were cut from $48.5 million to $20 million we were requesting 97 missiles. The funds were cut from $48.5 million to $20 million and Congress said, "Buy 40 missiles," that wasn't enough money to buy 40 missiles.

Much of the funding we were requesting was for the tooling and for the setup, so we could only buy four or five missiles with that amount of money. What we are proposing to do in lieu of the technical difficulties is to carry that money forward and use it to set up the line in 1987, and that together with the money we are requesting will buy the 51 weapons.

Mr. **HEFNER**. You are going to intend to reprogram any of this $19 million?

Dr. **COOPER**. No, it has been cut due to the Gramm-Rudman, but we do not propose to reprogram now.

Let us make sure the record is clear on this. We have experienced some problem with GBU-15 and the AGM-130 and right now we anticipate that we will be able to go in production in the third quarter of this coming year.

General Randolph and I have a major program review hearing scheduled in a month or so.

AGM-130 SECOND SOURCE

Mr. **Hefner**. The Air Force has announced it wants a second source to produce the AGM-130, but that it has no funds to pay the nonrecurring costs involved. It has solicited industry to propose "innovative ways" for qualifying and implementing a second source. What reaction are you getting from industry? What sorts of "innovative ways" do you have in mind for this proposed contracting action?

Dr. **Cooper**. I have personally asked that we looked to see if it is possible to second source AGM-130, but I don't know what the industry response has been.

General **Randolph**. The industry has not been very happy with our proposals, to be very candid about it. That is one of the issues that we are going to address in the review, but, Mr. Hefner, it is important for us to try our best if it is at all possible to second source because the competitive pressures are important.

If the numbers in the analysis are sufficient that second sourcing is economically warranted, we would do that.

Mr. **Hefner**. Do you envision asking the Congress to approve the use of unfunded contingent liabilities?

General **Randolph**. I don't know the answer to that. We will have to check. The whole issue of unfunded contingency liability is something that probably should be addressed as a macro subject not associated with the GBU-15 because we do put moneys at risk, in my mind, sometimes unnecessarily, in the contingent liability area.

[The information follows:]

After checking, we find that no unfunded contingent liabilities are envisioned for the GBU-15 or AGM-130.

Dr. **Cooper**. I think your committee has required that in our multiyears that we fund contingent liabilities upfront so we have those in an escrow account.

I don't know that we have much wiggle room other than to fund it upfront.

General **Randolph**. We must and the only way we cannot is to come back to you and ask you for permission not to, but our concern in the contingent liability area is that, say we put $100 of monies for several programs in contingent liability, the probability of ever needing that is at most maybe $10 or $15 so that means there is some $85 just lying around not being used very well. That is our concern, but the committee does have some different views on that, but we can't do it any differently without your permission.

PLSS AND JOINT STARS INTERDICTION

Mr. **Hefner**. Mr. Secretary, the Army and the Air Force are cooperating on various weapons systems to detect and destroy stationary and moving targets behind enemy lines. Two of the major systems to detect targets enemy lines are PLSS, position location and strike system, and JSTARS, joint surveillance target and acquisition radar system.

Identify all weapon systems which are currently available which could be used for interdicting targets detected by PLSS and JSTARS.

Dr. Cooper. I will have to do that for the record, Mr. Hefner.

[The information follows:]

Many Air Force air-to-surface and Army surface-to-surface weapon systems and individual munitions are suitable for attacking targets detected by the Precision Location Strike System (PLSS) and Joint Surveillance Target Attack Radar System (Joint STARS). Both PLSS and Joint STARS can detect targets (emitters and moving targets, respectively) in near-real-time. These systems will provide accurate location data allowing optimum employment of a variety of munitions. The effectiveness of each of the weapon systems relative to a specific target will vary as a function of the inherent weapon and target characteristics, delivery techniques and the delay between the target detection and interdiction time. Both within the Air Force and jointly with the Army we are taking various steps to ensure that the best available weapons are used to attack the highest priority targets in a timely manner with delivery techniques that increase both our survivability and effectiveness against the targets. In summary, all inventory weapons are available to be used with PLSS and Joint STARS.

Dr. Cooper. General Randolph may want to comment.

General Randolph. Of course, we have an array of both ground and airborne weapons, and we would use, once the targets have been identified by JSTARS or the PLSS, which we refer to as "Pells".

That includes the F-16, F-15E would be used in that interdiction role, and the A-7 could be used, and the F-111, and the Army has ground-to-ground weapons that also could be used for the shorter-range efforts.

PLSS CAPABILITY

Mr. Hefner. The PLSS program detects stationary targets such as radars.

To what extent would we already have knowledge of the precise location of those targets through other means—for example, ——— reconnaissance aircraft, human intelligence (HUMINT)?

General Randolph. Mr. Hefner, we have an order of battle that we keep, ———.

When you get into an active shooting conflict, you need to have the capability to be able to address the targets and attack the targets in near real time, and that is what PLSS and JSTARS are designed to do, give us that near real time capability in the progress of an active battle.

PLSS DIFFICULTIES

Mr. Seraphin. General, are there any proposals recently to cut back or to eliminate PLSS?

General Randolph. The PLSS program has been probably one of the more unhappy programs that we have had.

We have been working on that one for a long time. We have had some considerable difficulties. Here recently we have begun to collect good, useful data. I am personally not very pleased and I am sure Dr. Cooper would want to address that issue.

As a result, what we have asked our Air Force Systems Command people to do is to present to us a major review on the 27th of this month, specifically for the purpose of saying, where we are in PLSS, how much money have we spent and how much more is it going to take to get that program brought into operational use.

Dr. **Cooper**. Mr. Seraphin, there is a mixed view in the Defense Department right now vis-a-vis PLSS.

Yes, we have had commanders say they don't think they need PLSS and the Department has not taken a position on PLSS. Don Latham feels very strongly about it because unlike JSTARS, which uses an active radar, PLSS uses a different one, and you asked General Gabriel about this, it senses the emissions coming from an enemy radar.

Our concern has been over the technical difficulties with PLSS. It has taken a long time to get it through the development phase and we will observe due process and this program along with other programs is going to be laid out on the table for review, but we have not taken a position in the Department.

Mr. **Seraphin**. Of course, your analysis will speak to the same subject as Mr. Hefner's question; namely, what else is there out there which can provide similar kinds of targeting information?

Dr. **Cooper**. Absolutely. My knowledge is not as complete as General Randolph's, but that is a complex issue, when you look at the various systems we currently have deployed.

Mr. **Seraphin**. It is indeed, as is the entire subject of which weapons are to be used in conjunction with such a system as PLSS.

Dr. **Cooper**. Yes, and that goes to the heart of a question that Mr. Dicks asked yesterday and I think to talk about that we do need to go in our special session with you.

Mr. **Seraphin**. Yes.

Mr. **Hefner**. Mr. Young.

SOVIET MISSILE PROGRAM

Mr. **Young**. Thank you, Mr. Chairman.

I have one more question about the issue of AMRAAM.

Mr. Miller asked about the Soviet missile Mr. Latham talked about and I am wondering if that wasn't the Soviets AA-9, strategic air defense missile.

Dr. **Cooper**. We should take that back and ask Mr. Latham what he was talking about because I don't know.

Mr. **Young**. That is not the missile you talked about when you said that they were prepared to deploy a medium-range missile?

Dr. **Cooper**. Not the missile we were referring to.

Mr. **Young**. We can talk to Mr. Latham about that.

Dr. **Cooper**. I wish you would.

Mr. **Young**. Okay.

Thank you, Mr. Chairman. I will yield to Mr. Miller.

Mr. **Hefner**. Sure. Mr. Miller.

COMMAND CALIBRATION PACKAGE

Mr. **Miller**. Thank you, Mr. Chairman.

General and Mr. Secretary, one of the items funded in this account is the best Base/Air Logistics Command calibration package and the Newark Air Force Station calibration package.

This calibration work doesn't ever really get into headlines, but this is what assures accuracy and uniformity in our expensive high-tech Air Force weapons systems, including missiles and aircraft.

Last year, you began part of a multiyear upgrade in the Precision Equipment Measurement Laboratories, and this is continuing this year. Newark Air Force Station happens to be in my congressional district, which is why I have taken an interest in this particular item, which is a readiness issue. Incidentally, I notice in looking through the material—while we are talking about who comes from what districts—that General Skipton married a young lady from Marietta, Ohio. That is in my district, and anybody that picks a wife from Marietta, Ohio, has to do things right, so we should forget about the hearing and accept what you have to say. If they are from Marietta, Ohio, they have to be good people.

MX GUIDANCE SYSTEM CALIBRATION

Seriously, back to the Newark Air Force Station. There is no point in buying expensive weapons if we do not keep them properly calibrated. At that particular location, they are at the present time constructing facilities for calibrating the instrumentation and guidance systems for the MX. Perhaps you might summarize for the committee what is involved in the calibration work, maybe for the record.

It is something that does not receive headlines, but it is very important because if we buy all this expensive equipment, and do not calibrate it to guide it properly, we might as well forget it. So if you have someone that could summarize this operation, we would appreciate having it done now or for the record.

Dr. **Cooper**. Mr. Miller, it probably would be better to do it for the record.

Your point is well taken. Those sorts of things do make headlines if your missile accuracy are not what they should be so that is a very serious subject.

We might give General Skipton the pleasure of responding since he is from your district, though.

General **Skipton**. Sir, I think that the Air Force recognizes all the points you made and in the past several years we have started a major program to insure that when we are acquiring new systems, including the MX missile system, we are buying the calibration test equipment necessary to calibrate the guidance and control systems, and at the same time, developing the major weapons systems.

I have no specifics with me today to describe what that is for the MX missile, but we could get that for the record, sir.

[The information follows:]

The Air Force has budgeted and received funding approval for all equipment required to outfit the new Peacekeeper maintenance facility currently under construction at Newark AFS, OH. It should be pointed out the funding and procurement of this missile maintenance equipment was provided by the Peacekeeper System Program Office (SPO) and not the Newark AFS Calibration Package (P-1 Line 272). The new missile facility was designed for maintenance, not calibration, of the Peacekeeper inertial navigation guidance and control system.

To better understand the funding of the Air Force calibration scheme requires a brief explanation of the two levels of calibration. At Level I, the Air Force (AF) equipment standards of measurements and calibration reside at Newark AFS, OH in the AF Measurement Standards Laboratory (AFMSL). These standards establish the Air Force's highest order of calibration and come directly from the National Bureau of Standards in Washington, D.C. Funding to support the AFMSL is contained in P-1 Line 272 "Newark AFS Calibration Package" with $2.9 million requested in the FY87 President's Budget. The FY86-88 funding profile reflects 100 percent funding of the AFMSL requirement.

At Level II, calibration equipment is located at the approximately 140 Precision Measurement Equipment Laboratories (PMEL) throughout the Air Force (including Newark AFS, OH). Any Air Force aircraft, missile, communication systems and equipment requiring calibration is performed by one of these field or depot level PMELs. Funding for these PMELs is contained in P-1 Line 271 "Base/ALC Calibration Packages". The FY87 President's Budget requests $54.5 million versus a $65.6 million requirement. The maintenance equipment in the Newark missile facility is designed to repair the Peacekeeper inertial navigation guidance and control system. Calibration of this equipment will be the responsibility of the PMEL at Newark AFS, OH. Regardless of the funding shortfall in FY87, calibration equipment for the Peacekeeper system is being fully funded at the expense of lower priority systems.

All equipment requirements, whether for maintenance or calibration, are determined by a formal procedure in the weapon system acquisition process. For maintenance equipment, each contractor is required to submit a document called a Support Equipment Recommended Data (SERD). For calibration equipment, the contractor provides a Calibration/Measurement Requirements Summary (CMRS). The Air Force reviews these documents and compares the needed capabilities with those currently available at the PMEL's. New maintenance and calibration equipment is budgeted for if the required capability does not exist.

Mr. **Miller.** The Newark Air Force Station calibration package upgrade is reduced this year compared to last year, and perhaps you can tell us why. You may not have that information readily available, but you could furnish it for the record, if you would.

[The information follows:]

The Newark AFS Calibration Package (P/1 Line 272) funds the calibration standards for the Air Force Measurement Standards Laboratories (AFMSL) located at Newark AFS, OH.

The FY 87 program at $2.9 million is slightly less than the FY 86 program of $3.4 million because the FY 86 program included equipment needed for the newly constructed electro-optical laboratory at Newark AFS OH. The FY 87 program is funded at 100 percent of the requirement.

CALIBRATION PACKAGE UPGRADE

Mr. **Miller.** Last year it was about $3.5 million, and this year it will be $2.9 million, and I understand next year it will be increased again.

Perhaps you could give us some detail for the record instead of answering that right now, as to why the decrease and then back up next year.

Dr. **Cooper.** We will provide that, Mr. Miller.

Mr. **Miller.** Thank you.

[The information follows:]

The FY 87 program at $2.9 million is slightly less than the FY 86 program of $3.4 million because the FY 86 program included equipment needed for the newly constructed electro-optical laboratory at Newark AFS OH. The program increases in FY 88 to $4.2M to take advantage of an availability of technology to replace an aging laser calorimeter with a state-of-the-art device capable of meeting the demands of future weapon systems employing laser technology.

Stingers in South Korea

Mr. Miller. I noticed that we have some information concerning the Stinger, and no Stinger funds were requested for 1986. The 1987 budget requests $1.7 million for the Stinger, and as I understand it, they are to be deployed in Korea, I guess when I see this, I wonder about whether, if all the clothing is made in Korea, marked Korea, are we going to say "Made in America" when we send it over. But my question is, will South Korea be supporting in some way the financing of the Stingers that will be deployed there, manufactured here, shipped over, our people take care of them, and will they help to pay for them?

Dr. Cooper. We will have to flesh that one out, too, but as I recall on the Stinger issue, the reason we are deploying Stinger there is for air-base defense, but you have caught me kind of cold on that one.

I do not believe South Korea is assisting in paying for those, and they are for use by our own forces, I believe.

Mr. Miller. Put a little detail in concerning this; our forces are there to protect them. I know that we have an interest in what is going on in that part of the world and why we are there, but we are also there to protect them. We have so many nations today that feel that Uncle Sam will do the protecting and spend the dollars and Uncle Sam will do the taxing and will send the protection, so we need not put the chips in the pot.

As long as we will furnish the protection for them, they are willing to accept it without paying even a part of the bill in some cases, so if you could give us a little detail as to what is going on in that area.

Dr. Cooper. We certainly will and, as I recall, this was an issue that we addressed about three or four years ago when the initiative came forward. We have a couple of wings of aircraft in Korea.

Mr. Miller. I have been there and I know in general, what we have there, but want an update on the last five or six years.

Dr. Copper. Yes, sir.

What we were going to do with the Stingers was to give them to the air base security force, as close in air base defense to protect our own assets.

If my memory serves me correctly, I believe that is why we are sending them them.

[The information follows:]

STINGER missile systems in Korea are US purchased, and US owned. They are employed at Osan AB and Kunsan AB, and operated by USAF security policy personnel. The STINGERs were purchased to complement existing Republic of Korea (ROK) air defense capabilities at those bases.

Air defense in Korea is a host nation responsibility. ———.

In addition, the US Air Force equipped the 51st Security Policy Squadron at Osan AB, and the 8th Security Police Squadron at Kunsan AB, with the STINGER missiles to further improve point air defense for these two bases. We have purchased 216 missiles (60–FY84, 156–FY85) plus support and training equipment. Our FY87 request will procure ——— for the STINGER equipped security police squadrons.

Mr. Miller. Thank you.

Thank you, Mr. Chairman.

DURANDAL AIRFIELD ATTACK WEAPON

Mr. **HEFNER**. I want to ask you a couple of questions. For several years, the Air Force has been buying a French-produced airfield attack weapon called Durandal. On February 16, 1986, the French Air Force attacked an airfield in Chad by using another French weapon, the Thompson-Brandt BAP120.

Do you know why the French, when faced with a real-life situation, chose to use the BAP120 rather than the Durandal?

Dr. **COOPER**. No, sir. I do not.

Mr. **HEFNER**. I saw a demonstration, I guess in Boston or someplace, about a runway buster that they are working on.

Dr. **COOPER**. The reason we are buying the Durandal is as an interim weapon, that is where AVCO comes in with a DAACM.

General **RANDOLPH**. Direct airfield attack combined munition.

Mr. **HEFNER**. Are we going to buy any systems that we can make in America rather than abroad in France, especially? Is that going to be more effective, and more economical to us in the long run?

Dr. **COOPER**. We believe so in the long run.

General Skipton?

General **SKIPTON**. Yes, sir. The Durandal buy will end fiscal year 1988. We are starting full-scale development and low-rate initial production for the DAACM in fiscal year 1988, so the total airfield attack mission requirement through fiscal year 1991 is about ——— munitions.

With the completion of the fiscal year 1988 buy, we will have a mix of about 11,500 Durandal and the rest will be DAACM.

Mr. **HEFNER**. How many do we need?

General **SKIPTON**. We need about 28,000.

Mr. **HEFNER**. They don't get obsolete?

General **SKIPTON**. No, sir.

Mr. **HEFNER**. Like some of our nuclear stuff.

Dr. **COOPER**. Like all munitions they have a shelf life, but that is a very long period of time.

Mr. **HEFNER**. Mr. Livingston.

SPACE COMMAND

Mr. **LIVINGSTON**. Thank you, Mr. Chairman.

Congressman Kramer from Colorado has a bill to create a space command, separate from the Air Force, I believe? What are your feelings about that?

Dr. **COOPER**. Let me ask "Mr. Space" in the Air Force to respond to that.

General **RANDOLPH**. Of course, as you know, the Air Force established a separate Air Force Space Command three years ago and this past year the Department of Defense established a unified space command involving all of the services.

The activity levels in space in the Air Force, for example, this year, the funding that we require is about $11 billion and, as you can see, while that is a significant amount of money, that in terms of the overall activities of the Defense Department it is only a relatively small part, so the idea of having a separate service devoted entirely to space makes absolutely no sense to me whatsoever.

I can't understand why we would do that at this time and some time well into the 21st Century that may come about.

SHUTTLE PROGRAM

Mr. LIVINGSTON. Is the shuttle program in that $11 billion?

General RANDOLPH. Yes, sir. All of the boosters that we need to put the spacecraft into orbit, as well as our operational spacecraft ——— in space.

Mr. LIVINGSTON. This budget was completed before the shuttle disaster. I understand it will take well in excess of $2 billion just to build another shuttle to replace the one we have lost.

How does the loss of that shuttle impact this overall budget and your plans for space?

General RANDOLPH. We are in the process right now of trying to determine the proper course of action to recover from the Challenger tragedy. It was reported in the newspaper this morning that the total recovery cost for NASA and the Department of Defense, and that is, buying additional orbiters and buying expendable launch vehicles, would amount to about $5 billion over the five-year period, and that number is being looked at very hard by the Administration, so I have no idea whether that is going to come forward to the Congress for a request.

It is clear to me we will need to make a supplemental request for fiscal year 1986 to begin the recovery process and I suspect that that supplemental request will probably be on the order of $400 million to $500 million.

Mr. LIVINGSTON. To begin the recovery process, it is already underway?

General RANDOLPH. To financially support the purchase of additional expendable launch vehicles, and to begin to buy that replacement orbiter.

Dr. COOPER. Not the recovery of—we are talking about how do we get back on track in launching our satellities.

General RANDOLPH. We have worked with NASA closely. Right now, NASA, they are trying to keep the down time between the loss of Challenger and the beginning of launches with the orbiter to about a year. I don't know whether they will be able to do that or not, but given that they can keep the down time to a year, we believe that the Department of Defense can accommodate to that, and it will not cause any extremely serious problems.

It will cause problems, but not any extremely serious problems.

COMPLEMENTARY EXPENDABLE LAUNCH VEHICLES

Mr. LIVINGSTON. What about the complementary expendable launch vehicles? When are they scheduled for launch?

General RANDOLPH. No, sir. The first one, according to current schedule, would be launched in October of 1988. The Congress last year, 1986, gave us permission to proceed forward with the complementary expendable launch vehicle program.

Two things in that area. First, we, at Congress' suggestion, are going to come forward and ask for a multiyear procurement for the ten complementary expendable launch vehicles beginning in fiscal year 1987.

Mr. **Livingston**. That ten was the original projection. Have you added any additional ones into your figures?

General **Randolph**. Not yet, but we will add additional complementary expendable launch vehicles, and right now the Administration is discussing what is the right number. I have heard anywhere from 10 to 13 additional ones over the five-year period. That is the information that is being discussed right now within the Department, not an official position.

In addition to that, we will shortly send over a request for reprogramming. It is not a reprogramming in the sense of moving monies, but because of the bureaucratic process of putting certain monies in certain bins, we do not have all of the funds that were appropriated in fiscal year 1986 were in the advance buy category.

We are going to come back to Congress and ask you, within the monies already appropriated, if you would move those into the advance buy category for us to be able to move forward with the complementary expendable launch vehicle at a more efficient rate.

Mr. **Livingston**. With respect to the shuttles, are you contemplating changing the booster rockets at this point?

General **Randolph**. That is a NASA decision.

VANDENBERG LAUNCH FACILITIES

Mr. **Livingston**. Finally, we understand the Air Force had considered a proposal to temporarily mothball the recently constructed facilities at Vandenberg Air Force Base. Is that true? What are the plans for Vandenberg?

General **Randolph**. I know of no serious proposals to mothball Vandenberg. I am sure thare are a number of things folks have discussed, but I will have to say this: Vandenberg was built for a reason and that reason has not gone away. That is we must be able to launch the orbiter from Vandenberg in order to get into polar orbit and that is a very important part of our overall national space program.

Our overhead structure for arms control purposes, the so-called national technical means, depends on those high inclination launches so Vandenberg is indeed a requirement and will continue to be.

Mr. **Livingston**. I have heard estimates that the next shuttle launch may take as much as two years to get up, possibly more. How does that impact Vandenberg?

General **Randolph**. If the shuttle does not launch for two years, the nation has a very serious problem, because as you know, we really depend on the satellites, and that is going to be very, very difficult for us to accommodate to. However, I will have to say that I am hopeful that that is not going to happen.

I really believe that in the final analysis, NASA will have to make some design changes to that solid booster, and from everything I have heard, they intend to do that.

From my experience as an engineer, this is something we can do and we certainly can do it within the year to a year and a half time period, a year and a half at the most.

Mr. **Hefner**. We have a vote, and I thank you, gentlemen.

Dr. **Cooper**. Do you want us to return?

Mr. HEFNER. No.

We do have some questions for the record.

[CLERK'S NOTE.—Questions submitted for the record and the answers thereto follow:]

GROUND-LAUNCHED CRUISE MISSILE (GLCM)

Question. The Air Force is requesting $128.6 million to procure 76 GLCM. This request is for missiles only; all required launchers and other equipment having been funded in prior years.

The total number of GLCM's and SLCM's to be procured with FY 1987 funds is increased over FY 86. At the same time, the projected unit costs for missile airframe and propulsion are higher for FY 1987 than FY 1986.

Why is that? Shouldn't costs be going down?

Further, shouldn't the procurement of these missiles from two sources, as "all-up-rounds" also contribute to lower costs?

Why is it that the unit cost of the guidance and control system is projected to decline at the same time that airframe and propulsion are projected to increase?

Answer. Costs of most subsections of the GLCM missile are declining, when one looks at the overall program from FY 81 through FY 88. Because of some peculiarities in FY 87 however, some subsystems are expected to increase slightly. Therefore, the net unit cost increases from $1.747 million to $1.767 million (+$20 thousand). The airframe as shown in the P-12 exhibit includes the basic airframe procured competitively in the All-up Round contract ($0.836M); and the booster procured competitively from Atlantic Research Corp. and Chemical Systems Division ($0.153M). The basic airframe cost estimate has decreased from the FY 86 estimate; however, the booster cost eliminate has increased because GLCM continues to procure the MK-106 booster in FY 87 while the SLCM program procures an improved booster necessary for the SLCM vertical-launch configuration. As the MK-106 quantities significantly decrease in FY 87 the cost increases. This delta increase is less costly for GLCM than redesigning the missile and launcher software to accommodate the new booster and retrofiting fielded missiles. The propulsion subsystem shown in the P-12 exhibit is procured competitively from Williams and Teledyne for ALCM, GLCM, and SLCM. The slight projected increase in FY 87 is because the project office expects to award Teledyne (more expensive second source) increased quantities of engines in FY 86; thus, the average engine cost increases. Teledyne has invested considerable funds to establish a new facility which is expected to reduce the price of their engine in follow-on years. The increase is an investment to push Teledyne down the learning curve into a truly competitive position in FY 88 or FY 89.

Dual-source competition reduced the cost of FY 86 General Dynamics (GD/C) missiles (60%); however, McDonnell Douglas (MDAC) missiles (40%) are much more expensive as they are not very far down the learning curve. The net result is a slight reduction in FY 86 missile unit cost.

The guidance and control cost in the P-12 exhibit contains the guidance system components procured under All-up Round contract (MDAC and GD/C $0.182M); the Reference Measuring Unit and Computer procured competitively from two divisions of Litton ($0.213 million); and the Altimeter ($0.022 million). The net FY 87 guidance and control cost estimate has decreased as we continue to competitively procure large quantities and are progressing down the learning curve.

Question. The agreed upon GLCM program has for many years included a total of 5 R&D missiles and 560 production missiles. Through FY 1986, a total of 484 production missiles have been funded. The 76 missiles requested for FY 1987 will complete the agreed program.

Why, then, does the Air Force project buying GLCM 37 more missiles in FY 1987?

Answer. The additional missiles are needed in the logistics pipeline to ensure the 464 operational missiles can be maintained operationally ready over the life of the system. Three things have changed since last year that affect GLCM missile requirements. First, we have contracted for some missile recertifications and unscheduled repairs and have collected actual data on missile repair times. This data indicates that our previous estimate of 60 days repair time was optimistic. Therefore, we changed our repair time estimate to 90 days. Second, flight test failure history showed that we were experiencing a missile-destroyed rate of 16% vs 10% previously estimated. Third, the original estimate was based on the "wooden round" concept from the Navy; however, the Air Force periodically tests its missiles in storage and returns failed missiles (unscheduled maintenance) for repair. In summary, not only is our logistics pipeline bigger and longer due to unscheduled maintenance and increased repair times, but also the test attrition rate is higher than originally estimated. Our calculations and the rationale are in the detailed Analysis Summary we are submitting under separate cover.

Question. Of the agreed total of 560 missiles, 464 are to be deployed, and the remainder are for spares and operational testing, according to a detailed explanation provided last year by the Air Force.

A. What has since changed?

B. Provide a copy of the detailed analysis which supports a new, higher total.

Answer. Three things have changed since last year that affect GLCM missile requirements. First, we have contracted for some missile recertifications and unscheduled repairs and have collected actual data on missile repair times. This data indicates that our previous estimate of 60 days repair time was optimistic. Therefore, we changed our repair time estimate to 90 days. Second, flight test failure history showed that we were experiencing a missile-destroyed rate of 16% vs 10% previously estimated. Third, the original estimate was based on the "wooden round" concept from the Navy; however, the Air Force periodically tests its missiles in storage and returns failed missiles (unscheduled maintenance) for repair. In summary, not only is our logistics pipeline bigger and longer due to unscheduled maintenance and increased repair times, but also our test attrition rate is higher than originally estimated.

Our calculations and the rationale are in the detailed Analysis Summary we are submitting under separate cover.

Question. What will these additional missiles add to the cost of the program? Please note that we currently are dealing with procurement costs which are triple the original estimates.

Answer. The additional 37 missiles in FY 88 will cost $62.4M (then-year $) or $22.0 million (FY 77 base-year $). The procurement unit costs of FY 88 missiles in then-year dollars are expected to be $0.15M or 8.4% less expensive than the FY 86 missiles.

ALCM TEST FLIGHTS

Question. The test flight of an ALCM in Canada on Jan 22 ended in failure. The missile crashed after running out of fuel, reportedly because it encountered strong, unexpected headwinds. What was the purpose of the test? What part of the test objectives was achieved before the crash?

Answer. The purpose of the Jan. 22 Air Launched Cruise Missile (ALCM) flight over the Canadian test route was to: (1) provide inputs to determine weapon system accuracy and reliability; (2) verify current and future employment concepts, tactics and techniques; (3) verify the adequacy of technical data and equipment currently used in maintenance, checkout, and operation of the weapon system; (4) evaluate weapon system performance to include aircraft, software, and hardware reliability; (5) identify operational deficiencies. ———.

All test objectives were achieved on the January 22 flight with the exception of the recovery of the ALCM test vehicle. The recovery sequence is not part of the follow-on test and evaluation (FOT&E) data collection.

Question. Does the planning for such a test normally consider the environmental extremes to which the test vehicle may be subjected?

Answer. Planning for the Air Launched Cruise Missile (ALCM) Follow-On Test and Evaluation (FOT&E) program considers some environmental data. The basis for the climatological inputs used in the January 22 test did not include area specific information such as temperature or winds; rather, ———.

Question. Does the problem which was encountered translate into any operational concerns? For example, is it likely that ALCM's would encounter headwinds over the Soviet Union?

Answer. Immediately following the January 22 Air Launched Cruise Missile (ALCM) crash, Strategic Air Command (SAC) initiated an investigation concerning possible Single Integrated Operations Plan (SIOP) impact. ———.

As part of the SAC investigation, the climatological data used to base SIOP sorties on was reviewed. It was found that the likelihood of encountering the same conditions in the Soviet Union would be extremely remote. Additionally, the test sortie was planned to maximize weapon system evaluation and safety requirements. In order to meet these concerns a modified ALCM flight profile was flown which resulted in excessive fuel usage. SAC feels confident that the conservatism and actual ALCM flight profiles provide the needed pad to ensure SIOP mission objectives are met.

Question. A second attempt to test flight the ALCM took place on Feb. 25. The missile reportedly crashed soon after it was launched from the carrying aircraft. What was the purpose of the test? Has the reason for this failure been determined?

Answer. The purpose of the Feb. 25 Air Launched Cruise Missile (ALCM) proposed flight over the Canadian test route was to: (1) provide inputs to determine weapon system accuracy and reliability; (2) verify current and future employment concepts, tactics and techniques (3) verify the adequacy of technical data and equipment currently used in maintenance, checkout, and operation of the weapon system; (4) evaluate weapon system performance to include aircraft, software, and hardware reliability; (5) identify operational deficiencies. ———.

Final results of the Air Launched Missile Analysis Group (ALMAG) board findings have yet to be released.

Question. To date, how many test flights of ALCM-B's have taken place? What is the success/failure ratio of those tests? Is the Air Force satisfied with that ratio?

Answer. The B-52G/ALCM operational testing has been conducted in two phases. Phase I was accomplished by Air Force Operational Test and Evaluation Center (AFOTEC), and included Initial Operational Test and Evaluation (IOT&E) and Follow-On Test and Evaluation (FOT&E). Phase I lasted from 1 Oct 82 to 30 Jun 83. SAC conducted B-52/ALCM FOT&E (Phase II) began in Jul 83 and will continue throughout the system's operational life cycle.

An effective measure of ALCM reliability is reflected in FOT&E Phase II test results. This series attempts to highlight operational characteristics, capabilities and limitations noting any significant change or conclusion resulting from cumulative testing.

The following is a list of Phase II ALCM missile failures. Note that the 22 Jan 1986 crash is not counted as a failure. The missile flew successfully to the target with an excellent scored position. However, it ran out of fuel during the recovery sequence.

Date and malfunction:

18 Oct 83—Guidance failure
14 Jun 84—Electrical: Generator-regulator failure
22 May 85—Engine: Fuel contamination (H_2O)
10 Sep 85—[Deleted]
25 Feb 86—Unknown

Analysis of Phase II missile failures demonstrates no identifiable trend. The success/failure ratio of these tests, with 29 successes and five failures, is 85.3%. This ratio is considered satisfactory, given the objectives, requirements and limitations of FOT&E Phase II program.

Question. Is there any evidence that specific design or production problems exist in ALCM-B? Are corrective actions required?

Answer. The Air Force and Strategic Air Command are constantly testing and evaluating the Air Launched Cruise Missile to ensure reliability and maintainability. Since the ALCM has come into service some 29 changes have been incorporated in order to upgrade or refine its capability. The ALCM is a state-of-the-art weapon that has no specific design or production per se, but has, and will continue to have requirements for upgrade improvements and modification.

BALLISTIC MISSILE REPLACEMENT EQUIPMENT

Question. The Air Force is requesting $69.7 million for Ballistic Missile Replacement Equipment. This budget line funds the replacement of organization and intermediate level support equipment for strategic missiles. Last year, $66.7 million was provided for this purpose. The FY 1986 column of the FY 1987 budget now shows $63.9 million. Why is that? What happened to $2.8 million?

Answer. The $2.8 million difference is the Ballistic Missile Replacement Equipment portion of the $343 million inflation premium and inflation fairness adjustment against the missile appropriation directed in the conference report to the FY 86 continuing resolution authority.

Question. Provide for the record a specific listing of the items to be procured, and the cost of each, for each of the five years FY 1986 through FY 1991.

Answer. For 1986 the following items are being procured in the Ballistic Missile Replacement Equipment line. All items are for Minuteman support.

(ALMAG) board findings have yet to be released.

[Dollars in millions]

Item	Quantity	Cost
4953AH Test Launch Support Sys (TLSS)	Groups 1 & 2	$29.3
MAT-S ATS-E35 (HP9500) Test Stations	6	7.5
Rivet Mile Programmed Depot Maintenance (PDM) Support Equipment/Cycle II	LOT	6.6
Minuteman Automated Data Analysis and Reduction System (ADARS)	2	3.5
Items Less than $2.0M		11.4
Subtotal		58.3
Inflation Adjustment		2.8
Reprogramming		2.1
Gramm-Rudman-Hollings		3.5
Subtotal		8.4
Total		66.7

For FY 1987 the following chart identifies the items to be procured in the Ballistic Missile Replacement Equipment line. All items are applicable only to Minuteman support.

[Dollars in millions]

Item	Quantity	Cost
Transporter-Erector	17	$29.6
Air Conditioner, Missile Transporter	50	8.0
Rivet Mile PDM Support Equipment	LOT	7.8
Test Launch Support System (TLSS)	Group 3	6.0
Explosive Circuitry Test Set	34	2.8
Magnetic Tape Unit/Recorder-Reproducer	20	2.5
Items less than $2.0M		13.0
Total		69.7

For FY 1988 the following chart is a representative listing of the items planned for procurement in the Ballistic Missile Replacement Equipment line. Complete detail will not be available until the FY 1988 Budget Estimation Submission. Items are for support of Minuteman and Peacekeeper.

[Dollars in millions]

Item	Application	Quantity	Cost
Transporter-Erector	Minuteman	16	27.5
Rivet Mile Programmed Depot Maintenance (PDM) Support Equip/Cycle II.	do		5.5
Explosive Circuitry Test Set	do	33	2.7
Magnetic Tape Unit/Recorder-Reproducer	do	20	2.5
Items less than $2.0M	do		20.2
Test Equipment	Peacekeeper		4.0
Items less than $2.0M	dp		8.0
Total			63.2

A specific listing of items to be procured for FY 1989 through FY 1991 in the Ballistic Missile Replacement Equipment line is not available at this time.

Question. Budget documentation says that FY 1987 funds will be used to buy Minuteman Transporter-Erectors. FY 1986 funds were requested to buy 13 of those. Why are more needed?

Answer. The FY 1986 funds were requested for 13 Missile Transporter Truck Tractors which are mated to the missile transporter to move the Minuteman missile over the highway between the maintenance depot, the strategic missile wings, and test facilities at Vandenberg AFB, CA. The Missile Transporter Trucks and their Tractors are different equipment items than the Transporter-Erectors used to remove and emplace missiles within the strategic missile wing complex.

The Transporter-Erectors (TEs) identified in the FY 1987 documentation are only used for transport, emplacement and removal of Minuteman missiles within the wing complex and will replace TEs in service since 1959.

Question. Budget documentation says that FY 1987 funds will be used to buy Air Conditioners for Missile Transporters. FY 1986 funds were requested to buy 25 of those. Why are more needed?

Answer. Total planned replacement is for 50 units. All 50 units will now be procured in FY 1987 due to congressional reduction by $20 million of the AF request of $86.7 million in FY 1986.

Question. Budget documentation says that FY 1987 funds will be used to buy a Minuteman Test Launch Support System. FY 1986 funds were requested for the same purpose. Please explain.

Answer. As of the FY 1987 President's Budget, the Test Launch Support System (TLSS) replacement is being procured in three groups:

Group 1—Repeater Sub-System
Group 2—Monitor and Control Sub-System
Group 3—Test Set required for trouble shooting systems contained in Groups 1 and 2

Group 3 is the final phase of this effort and is planned for procurement in FY 1987. Groups 1 and 2 are being procured in FY 1986.

Question. State the impact if the FY 1987 request for Ballistic Missile Replacement Equipment were reduced by one-half. Please be specific.

Answer. A 50% reduction in funding will require the cancellation or delay of major procurements in support of Minuteman such as Transporter-Erectors ($29.6 million) and Rivet Mile equipment ($7.8 million).

The FY 1987 Transporter-Erector (TE's) request will fund the first production option for 17 new design TE's competitively awarded to Goodyear Aerospace in FY 1985. Without these new TE's to replace existing non-supportable units, we would be unable to continue the ongoing program to recycle Minuteman missiles for the stage II motor washout, the stage III motor remanufacture and the Rivet Mile Programmed Depot Maintenance (PDM) program after 1989. As a result, there would be a significant decrease in the operational alert rate of Minuteman beginning in 1989 and continuing until replacement T-E's are provided or the alert rate becomes zero.

The FY 1987 Rivet Mile request will fund essential support equipment for cycle II of the PDM work beginning in FY 1989. Without this support equipment, we would not be able to maintain the planned PDM schedule which requires simultaneous repair of Minuteman launchers at each of the six wings. As a result the Minuteman alert rate would decrease as significant deficiencies are not corrected.

AMRAAM

Question. The cost of the AMRAAM program continues to be of urgent concern. The Air Force is requesting $656.6 million to procure the first lot of 260 missiles. This marks the third successive year in which the Air Force has said that AMRAAM is ready to begin procurement. Secretary Weinberger has submitted a certification, dated February 28, 1986, concerning the AMRAAM program, as required by the authorization legislation for fiscal year 1986.

Secretary Weinberger certifies that the design is completed. Why are $39.1 million requested in FY 1987 for AMRAAM RDT&E? What is different from last year when the project RDT&E requirement for FY 1987 was $1.1 million?

Answer. The Air Force is requesting $656.6 million to procure the first lot of 260 missiles. This is consistent with the program as restructured in January 1985 from a 50 month of a 79 month full scale developments (FSD) schedule as a result of FSD and production program delays. Under the original 50 month program, $1.1 million would have completed the RDT&E program in FY 1987. The restructuring extended the development test and evaluation/initial operation test and evaluation and follower contractor activities through FY 1988. The $39.1 million FY 1987 RDT&E funding plan follows:

Raytheon Training (follower contractor)	$3.6 M
Peculiar Support Equipment	8.3 M
Class II Modifications (for test aircraft)	7.8 M
Government Support	19.4 M
	39.1 M

Question. Secretary Weinberger certifies that a minimum of 17,000 missiles will not cost more than $5.2 billion to procure. However, an attachment to his letter says that this price will be achieved only if the Navy buys an addition 7,000 missiles for $1.8 billion.

A. Does this certification meet the intent of the legislation?

B. At that time in the past, and in what documents did the Air Force inform the Congress that its cost projections were dependent on Navy involvement?

Answer. The Air Force believes that acknowledgement of the planned 7,000 Navy missiles as a requirement for the Air Force's $5.2 billion production cap does not affect the intent of the legislation. The Air Force has consistently represented the AMRAAM as a joint Air Force/Navy program. This joint approach has been in effect since the early 1970's when the Air Force and Navy performed joint validation studies which substantiated the need for a new air-to-air missile as a follow/on to the Sparrow. This joint service concept was further substantiated through the development of the Joint Services Operational Requirement (JSOR) and the establishment of a Joint System Program Office (JSPO) in the mid-1970's. Congressional documents from the Air Force, such as the Descriptive Summaries, have consistently portrayed AMRAAM full scale development (FSD) as a joint Air Force/Navy effort. Likewise, the planned production profiles have been reported in the AMRAAM System Acquisition Reports (SAFs) of both the Air Force and Navy since the Dec 1982 SARs.

Production planning must be based on the combined Services' quantity since there will be a common missile configuration. As a result, the two contractors will set up common production lines for Air Force and Navy production. The Services' production schedules and costs are interdependent since the contractors' quotes on each production lot, and the Air Force's verification of these costs, are based on the total number of missiles expected to be built in each production lot. Finally, the FY 87 AMRAAM Descriptive Summary from the Air Force, stated that "the production program is based on a buy of 17,108 missiles for the Air Force and 7,234 missiles for the Navy extending through 1996." The Air Force believes that we have consistently represented AMRAAM as a joint program to Congress.

Question. What is the status of qualifying Raytheon as a second source?

Answer. There are five elements key to having Raytheon qualified as a second source producer of AMRAAMs and we believe Raytheon is making good progress in each of these areas. First, they have 99% of all the documentation required from Hughes to enable them to build the 15 qualification missiles. Secondly, they were awarded contracts for the above and below missile chassis special test equipment (STE). Through these contracts, Raytheon will have built, verified and certified STE necessary for the manufacture of missiles. Also, the final assembly and checkout (FACO) test station equipment was delivered to Raytheon from Hughes in November 1985 and is not operational. Thirdly, the theoretical and practical training from Hughes is proceeding on schedule. Fourthly, Raytheon has already received two Full Scale Development (FSD) missiles and is scheduled to receive the other three missiles from Hughes in the next couple of months, all of which are instrumental to their training. Lastly, the letter contract between Raytheon and the government to fund 15 qualification missiles was signed in November 1985 for $15.2 million. This money was used to initiate long lead vendor items and to start qualification of Raytheon as a maker of large scale integrated (LSI) circuits and hybrids. The government is currently negotiating this contract with Raytheon since it requires definitization by May 1986. We expect Raytheon to execute the qualification program so as to allow them to compete with Hughes by Lot III (FY 1989 procurement).

Question. What is the status of the producibility enhancements funded in the FY 1986 appropriation?

Answer. The AMRAAM producibility program began in February 1985 when Hughes Aircraft and Raytheon Companies were awarded study contracts. Both contractors submitted proposals for consideration in the fall of 1985. In February 1986, the AMRAAM Program Office selected eight Hughes and eighteen Raytheon proposals which they believe will have the greatest payoff potential. We are currently negotiating these proposals for funding to start in April 1986. The Air Force expects the producibility program to result in $1.5 billion (FY 84 $) of savings in hardware costs over the life of the AMRAAM program.

AIR FORCE AUDIT AGENCY AMRAAM REPORT

Question. A report by the Air Force Audit Agency, dated December 12, 1985, concluded that the Hughes Aircraft Company was paid progress payments on the AMRAAM program which exceeded the fair value of the work done. In effect, the Air Force paid the contractor before it was reasonable to do so. Because of these actions, the government incurred an additional program cost of about $2.7 million in imputed interest charges. Has the Air Force taken action to recover these $2.7 million? Does it appear that these excess payments were part of an attempt to help "bail out" the contractor? What steps have been taken to prevent recurrence of this situation?

Answer. The Air Force Audit Agency report concluded that Hughes Aircraft Company was paid progress payments on costs incurred which exceeded the fair value of work completed during the period March to September 1984. Upon discovery of the over financing, we ceased making further progress payments until the fair value of the work completed was equivalent to progress payments already made. This calculation was based on the December 1984 revised estimate-to-complete. Because the contract does not provide for recovery of interest in a case of overfinancing such as this, we do not have any avenue to obtain the $2.7M mentioned by the AFAA. Also, AMRAAM progress payments were being suspended altogether from October 1984 through June 1985.

We were not attempting to "bail out" Hughes in this situation. To avoid having an overpayment recur, the AMRAAM Program Office implemented strong management controls in December 1984. The Program Office instituted closer monitoring of bills, etc. used for determination of the fair value of work completed to compliment the tracking traditionally done by the Air Force's Plant Representative's Office (AFPRO) at the Hughes' Tucson plant.

HARM INSPECTION

Question. The Air Force is requesting $493.4 million for production of 2,130 HARM missiles. The Navy is executive agent for development and procurement of the system.

In February, a tear-down inspection of a production missile was made. The intent was to check on corrective actions which were implemented in the production line after quality control problems had been uncovered. We are told that over 800 problems, of varying severity, were found. Of those, 25 were termed to be serious. Did the Air Force participate in, or monitor, this inspection? Is the Air Force satisfied with the result of the inspection? Is the Air Force satisfied with Navy actions taken subsequent to that inspection?

Answer. The Air Force monitored the tear-down and is an active part of the HARM quality program. The February inspection was conducted as part of the continuing HARM quality program. The Air Force is satisfied with the progress reflected in the results of that inspection. The inspection uncovered about one half as many major defects as the inspection completed in July 1985 uncovered (28 versus 56). (A major defect is one that will not affect the reliability). No critical defects (defects that impacts missile performance) was found. Ideally we would like to find no defects.

The Air Force is satisfied with and was a part of the management process that implemented additional quality procedures as a result of the February inspection.

Question. The quantities of HARM to be procured appears to be a variable, changing each year. Last year, the Air Force said that "due to the fiscal constraints with the FY 1986–1990 budget the Air Force has only programmed 9,167 HARMs for procurement." Why does the FY 1987 budget now show a total buy of HARM as 7,821 missiles? Does this reduction indicate some lessening of commitment or concern over the future operational suitability of the weapon?

Answer. The total HARM procurement quantity reduction is not a function of a lessening of the requirement for HARMs or concern over operational suitability but rather due to fiscal constraints.

Question. What increase in unit costs will be caused by this reduction in quantity?

Answer. The total program unit cost will decrease slightly from $293,000 reported in the Dec. 84 SAR to $291,000 in the Dec. 85 SAR. This is largely due to the proposed Air Force and Navy multiyear production and leveling of the production profile at 3,240 total Air Force and Navy quantity in FY 1987 through FY 1990. There will be a slight impact in the unit cost for the FY 1986 year. The unit cost increases from $283,000 to $290,000, a 2.5 percent growth over the Dec. 1984 SAR.

Question. How stable is the currently planned quantity? Is it subject to change again next year?

Answer. The Navy and Air Force are proposing in the FY 1987 budget a three year multi-year procurement of the HARM starting in FY 1987 to stabilize HARM procurement and maintain unit cost in light of reduced procurement quantities. Assuming the multi-year procurement is approved, HARM quantity should remain stable.

Question. Technical difficulties were experienced last year in flight testing of HARM missiles. Have all technical problems now been resolved? Is the Air Force satisfied with the status of HARM software, and of the documentation of that software?

Answer. The Air Force believes the technical problems experienced last year have been solved with the incorporation of the FY 1984 software fixes. Testing of the new software, repeating the earlier failed tests, was completely successful (6 for 6 launches were successful). The Air Force participated in the HARM hardware and software audit conducted last year and is satisfied with HARM software status and documentation.

IR MAVERICK

Question. The Air Force is requesting $581 million to procure 4,700 IR Maverick missiles. Of that number, 4,100 will be procured competitively from Hughes and Raytheon, and 600, configured with a large warhead, will be procured sole source from Hughes. Of that 2,600 weapons being procured with FY 1986 funds, 800 are a pilot production run at Raytheon. What is the current status of qualifying Raytheon as the second source?

Answer. Raytheon completed their qualification program in December 1985. On 6 January 1986, a pilot production contract option was exercised with Raytheon for 800 missiles.

Question. Has a pilot production option for 800 missiles from Raytheon been exercised?

Answer. Yes, a pilot production option with Raytheon was exercised on 6 January 1986.

Question. What is the status of production at Hughes? Is the Air Force satisfied that quality control problems have in fact been corrected?

Answer. Hughes presently produces an average of 100 missiles per month. They continue to increase this rate and are working toward the capability to produce over 300 missiles per month in mid FY 87.

The Air Force is satisfied with the Quality Improvement Plan implemented at Hughes. A recent Air Force Contractor Operations review verified the overall improvement in quality and rated the hardware quality as the best of 17 contractors reviewed. Continous surveillance, including production line inspection, also reveals a decrease in the overall defect rate further indicating that effective controls are in place at the production facility.

Question. What will be the split between contractors for the 4,100 FY 1987 missiles being procured competitively?

Answer. The process by which the FY 87 missiles will be split between contractors is under review at this time by HQ AFSC Business Strategy Panel members. It is intended that the actual split will be determined by the FY 87 priced proposals. A guaranteed minimum quantity will not be released prior to FY 87 proposal evaluation.

Question. Why are the 600 missiles with larger warheads being bought sole source? Why cannot those, or parts of them, also be competed?

Answer. The competition strategy for FY 87 is in review by HQ AFSC Business Strategy Panel members. They are evaluating the possibility of introducing 600 AGM-65G (large warhead missile) and 419 AGM-65F (Navy/large warhead missile) missiles to the competition for FY 87.

Question. When will procurement of IR Maverick become fully competitive?

Answer. IR Maverick will be fully competitive in FY 87. The split between contractors will be determined by the FY 87 priced proposals.

Question. Starting in FY 1988, the Air Force intends to buy IR Maverick at a steady rate of 7,000 per year for 6 or 7 years.

a. What other steps, besides having two sources, are being examined to lower costs?

b. For example, could multiyear procurement methods also be considered for either entire weapons or from subsystems?

Answer. Competitive multiyear procurement will be considered as a method to lower costs beginning in FY 88. However, the FY 88 and outyears procurement strategy is under review and has not been determined yet.

AGM-130

Question. The Air Force is requesting $26.6 million for procurement of 51 AGM-130's, a rocket-powered version of the GBU-15 glide bomb. Last year, the budget request of $48.5 million for 97 units was reduced by the Congress to $20.0 million for 40 units because a production decision was not scheduled to be made until the third quarter of fiscal year 1986.

Last year, we asked why procurement funds could not be deferred. The Air Force replied, in part, that the AGM-130A would be ready for production in the third quarter of FY 1986, and that "the AGM-130A is simply a product improvement to the GBU-15, a weapon system already in production." Given the apparently poor performance by the contractor and our current fiscal difficulties, what consideration has been given to outright cancellation of this program?

Answer. The AGM-130 has not been considered for cancellation because the contractor is improving his performance and this weapon provides a needed stand-off capability to reduce aircraft losses in combat.

Question. Do you envision asking the Congress to approve the use of unfunded contingent liabilities?

Answer. No.

STINGER

Question. In fiscal year 1984 and 1985, funds were provided for the Air Force to procure a total of 216 Stinger missiles. These weapons are intended for defense of selected air bases in Korea. No Stinger funds were requested for fiscal year 1986.

The 1987 budget requests $1.7 million for Stinger. The only explanation provided is that these funds are for "Special Handling Equipment." What specifically is to be procured? Why is it needed?

Answer. The Air Force request of $1.7M will procure ———.

Question. Why was this requirement not projected in the FY 1987 column of the FY 1986 budget?

Answer. The requirement to extend the ability of our Stinger-equipped security police squadrons at Osan AB and Kunsan AB, Korea, ——— was submitted by the Pacific Air Forces as a new requirement for FY 87. This occurred after the FY 86 President's Budget was submitted to Congress.

Question. Have missiles in fact been deployed to Korea? Are they proving to be operationally suitable?

Answer. In June 1984 the Air Force achieved an initial operational capability (IOC) to provide point air defense for Osan Air Base and Kunsan Air Base, Korea, with ——— Stinger missiles. These missiles were loaned by the US Army to accelerate the Air Force IOC. These "loaners" will be repaid from the Air Force procurement in FY 84 and FY 85. When missile deliveries are complete in FY 88, the Air Force will be at a full strength of ———.

SPACE BOOSTER

Question. General Randolph, what is the current best estimate of how long the Space Shuttle flights will be delayed because of the recent tragic accident?

Answer. Dr. Graham, acting Administrator of NASA, has stated a delay of 12 months is the current baseline planning estimate.

Question. What plans does the Air Force have to request funding for additional expendable launch vehicles (ELVs) beyond those already approved by Congress? How does this affect the proposed multiyear contract for Complementary Expendable Launch Vehicles?

Answer. The Air Force was tasked by DOD to make a detailed and careful review of the Shuttle loss impact to DOD space programs and to provide a set of alternatives to cover shortfalls in launch capability. Plans include additional Complementary Expendable Launch Vehicles (CELVs) and medium class ELVs (i.e., Atlas, Titan II, Thor/Delta). The request for a multiyear procurement of ten CELVs is currently in review by Congress. We anticipate go-ahead to award a multiyear contract in the FY 87 Appropriations Act. A first look at a procurement strategy for additional CELVs suggests award of a follow-on multiyear contract rather than altering the proposed multiyear procurement contract of ten CELVs; however, additional CELVs as an option, or options, to the existing contract are still a possibility.

UPPER STAGE BOOSTERS

Question. Upper stage boosters are used to boost space satellites into a higher orbit, once they have been put into low orbit by the Space Shuttle or other launch vehicle. The Air Force plans to use a particular booster, called CENTAUR G, FOR ALL GEOSYNCHRONOUS SATELLITES. An April, 1985 DOD IG audit challenges this decision as premature. General Randolph, what criteria does the Air Force use to determine which upper stage to use for a given satellite?

Answer. The Air Force uses several criteria to determine which upper stage to use for a given satellite. The required upper stage capability is based on the satellite weight and desired orbit. Also, the technical, schedule, and financial risks are assessed. Currently the Air Force plans to use two different types of upper stages, the Inertial Upper Stage (IUS) and Centaur. The IUS is used for satellites weighing up to 5000 pounds, and the Centaur is used for satellites weighing up to 10,000 pounds. The planned inventory will satisfy requirements until the mid 1990's at which time the Air Force will compete the contract for upper stages.

Question. The DOD IG says the Air Force could save between $18-$33 million per launch for some payloads through use of commercial systems. Does the Air Force consider commercial systems today when it assigns upper stage boosters to satellites? Do you plan to consider them in the future? Provide for the record, future satellites which may be candidates for commercial upper stages.

Answer. The current Air Force upper stage inventory plus upper stages on contract will satisfy requirements until the mid-1990s. To satisfy follow-on requirements, the Air Force established a policy to compete procurements for upper stage propulsion systems at all major spacecraft and/or launch vehicle configuration/block changes. Based on cost-effectiveness and mission requirements, the Air Force will consider all upper stages—integral, integrated, and separate (multipurpose) systems. Competitive commercial upper stages are welcome. Candidate satellite systems for potential competition at their spacecraft block changes include the NAVSTAR Global Positioning System, the Defense Satellite Communications System, and the Defense Support Program.

Question. We understand the Deputy Under Secretary for Strategic and Theater Nuclear Forces in October, 1983 stated that "integral propulsion systems," which are part of the satellite, could save over $30 million per launch for some satellite configurations. Are integral propulsion systems ever considered by the Air Force as cost-effective alternatives to upper stage boosters? Do you plan to consider them in the future? Provide, for the record, future satellites which may be candidates for integral propulsion systems.

Answer. The current Air Force upper stage inventory plus upper stages on contract will satisfy requirements until the mid-1990s. To satisfy follow-on requirements, the Air Force policy is to compete procurements for upper stage propulsion systems at all major spacecraft and/or launch vehicle configuration/block changes. The Air Force will consider all upper stages—integral, integrated and separate (multipurpose) systems. Competition by commercial upper stages is welcome. Candidate satellite systems for potential integral propulsion competition at their spacecraft block changes include the NAVSTAR Global Positioning System, the Defense Satellite Communications System, and the Defense Support Program.

DEFENSE SUPPORT PROGRAM

Question. A total of $358.5 million is requested in Missile Procurement, Air Force for the Defense Support Program (DSP). ———.

The justification book mentions that efforts were continuing for the first launch of a DSP satellite on the Shuttle. This launch was to take place in ———. What is the Air Force's current estimate as to how long the Shuttle will be delayed?

Answer. Dr. Graham, acting Administrator of NASA has stated that a delay of 12 months is the current planning estimate.

Question. When in ——— was this DSP launch by the Shuttle to take place?

Answer. The DSP Shuttle launch was scheduled for ———.

Question. What is the current projected longevity of the currently operational DSP satellites?

Answer. ———.

Question. Plans are also proceeding to launch a DSP satellite on a Complementary Expendable Launch Vehicle (CELV)—the new generation of expendable launch vehicles ———?

Answer. ———.

We do not foresee any technical obstacles or expect any contract issues that could delay the ILC.

Question. Funds are requested to initiate a $1.4 billion multiyear procurement for the DSP satellite. The FY 1987 budget request includes $250 million for long lead items for five DSP satellites. Provide for the record a procurement profile—costs and delivery schedules—of procuring the five DSP satellites annually over the next number of years as opposed to multi-year procurement.

Answer. Table 1 compares the quantity and funding profiles for the annual versus multiyear procurement. As can be seen, the overall savings is $329.4 million or 20%.

Figure 1 compares the delivery schedules for the annual and the multiyear procurements with the expected launch requirement.

The production line assembly techniques available under multiyear will produce satellites at a rate which will support the launch requirements. The annual buy, however, won't support the launch needs.

[CLERK'S NOTE.—Figure 1 is classified and has been deleted.]

TABLE 1

QUANTITY AND FUNDING

Annual Program	FY 87	FY 88	FY 89	FY 90	FY 91	Total
Quantity		1	2	1	1	5
End Item		403.1	592.5	347.0	310.5	1653.1
Less Adv Procurement		134.4	168.8	91.7	95.8	490.7
Net Request		268.7	423.7	255.3	214.7	1162.4
Advance Procurement	134.4	168.8	91.7	95.8		490.7
(FY 88)	(134.4)					(134.4)
(FY 89)		(168.8)				(168.8)
(FY 90)			(91.7)			(91.7)
(FY 91)				(95.8)		(95.8)
Total Annual Cost	134.4	437.5	515.4	351.1	214.7	1653.1
Multiyear Program						
Quantity		1	2	1	1	5
End Item		358.4	494.4	248.6	222.3	1323.7
Less Adv Procurement		72.4	144.7	72.4	72.3	361.8
Net Request		286.0	349.7	176.2	150.0	961.9
Advance Procurement	250.0	63.1	36.4	12.3		361.8
(FY 88)	(72.4)					(72.4)
(FY 89)	(132.4)	(12.3)				(144.7)
(FY 90)	(33.1)	(27.0)	(12.3)			(72.4)
(FY 91)	(12.1)	(23.8)	(24.1)	(12.3)		(72.3)
Total Multiyear Cost	250.0	349.1	386.1	188.5	150.0	1323.7
Multiyear Savings	-115.6	+88.4	+129.3	+162.6	+64.7	+329.4

GLOBAL POSITIONING SYSTEM

Question. Funds are requested for 8 GPS (Global Positioning System) satellites. Funds were provided for 9 GPS satellites in FY 1986 and 6 in FY 1985. How many GPS satellites are presently in the manufacturing cycle?

Answer. There are currently 9 GPS satellites in various stages of the manufacturing and test cycle. Parts have been ordered for all 28 satellites covered by the multiyear program. Initial deliveries will commence in January 1987.

Question. How many are "in the barn" ready for launch?

Answer. None. The first contractual delivery date is January 1987.

Question. What are the implications, for the GPS launch schedule, of the Shuttle disaster?

Answer. While initial GPS launches will require rescheduling, final establishment of the full production constellation will depend on the restart and rate of Shuttle launches, as well as the availability of expendable vehicles to augment Shuttle launches. These factors are still being assessed. Current planning includes the procurement of expendable launch vehicles for four GPS satellites per year as soon as practical. The procurement will depend on Congressional support for a DoD Fiscal Year 86 supplemental and Fiscal Year 87 budget amendment.

Question. Provide for the record:

The original GPS launch schedule; and Revised GPS launch schedules based on: A twelve month delay in getting the Shuttle operational; An eighteen month delay; and A twenty-four month delay.

Answer. Prior to the Shuttle accident the GPS launch schedule called for eight launches in 1987, seven launches in 1988, and six launches in 1989 to establish the full 21 satellite production constellation. The revised GPS launch schedule is still undergoing assessment. Additional information will be provided when available.

Question. What ELV's (expendable launch vehicles) can GPS be launched on? What is the availability of those ELV's?

Answer. The most likely candidates for GPS ELV's currently are the Atlas K, the Titan II (with solid rocket strap-ons) the Titan 34D, and the Delta (also with solid rocket strap-ons). Some modifications to these vehicles would be necessary. The cost of the vehicles and attendant modifications, as well as potential availability, are still undergoing assessment; no final decision has yet been made.

Question. As you are aware, the Air Force is proceeding with a plan to refurbish various Titan II expendable launch vehicles and use them to launch satellites. The Committee is advised that a Titan II with "strap-ons" could launch GPS satellites. Is that accurate? Is it economical? Do you have any plans to request funds for such a launch strategy?

Answer. The Titan II is a feasible candidate for an expendable launch vehicle for GPS satellites; however, it is likely that substantial structural modifications would be required. The economics and schedules associated with several launch vehicle candidates are currently being assessed; no final decision has yet been made.

Question. What is the per-unit cost of the 8 GPS satellites requested for FY 1987?

Answer. The unit cost as specified in the P-series is $36.2 million.

Question. What is the delivery schedule for those 8 satellites?

Answer. The 8 satellites to be funded in Fiscal Year 1987 will be delivered during the period April 1989 to March 1990.

Question. Provide details for the record on the projected operational lifetime of GPS satellites based on the most recent data.

Answer. The GPS production satellites are designed for a mean mission duration of six years.

ASAT

Question. The Air Force states that the ASAT procurement program has been completely restructured. Under the current plan, procurement of ASAT missiles will occur over fiscal years 1988 through 1992. The FY 1987 budget requests $28.5 million in advance procurement funds for long lead parts to support an FY 1988 procurement of the first ——— missiles.

The Congress provided a total of $28.3 million for ASAT advance procurement in FY 1984 and FY 1985. The Air Force said that those funds were sufficient for the long lead parts for four missiles.

Why isn't that sufficient for the first ——— missiles now planned for FY 1988, Why are another $28.5 million required for the same purpose? What happened to the $28.3 million already provided?

Answer. The $28.3 million previously provided for advance procurement has been obligated. We have procured long lead parts for four missiles with these funds.

We are using the long lead parts in the procurement of one operational flight missile in Fiscal Year 1985. This missile will undergo reliability and maintainability testing and will then be placed into the operational inventory. The long lead parts for the three remaining missiles are being used in the production transition phase, which was added as a result of several previous recommendations by Congress and an Independent Review completed last year. This production transition phase is intended to make the system more producible, supportable, and operable. Because of the long lead time associated with obtaining some of the more critical missile assemblies we believed this was the most efficient and prudent use of these parts. Finally, the $28.5 million is the advance procurement required to support the first production lot of ——— missiles.

Question. The Congress provided $65.2 million in FY 1985 for ASAT missile procurement. The FY 1985 column of the FY 1987 budget shows no funds. What happened to the $65.2 million? Provide a detailed accounting of these funds.

Answer. The FY 1987 budget assumed that the $65.0 million of FY 1985 missile procurement funds would be reprogrammed into RDT&E. We subsequently determined that these funds can best be used in procurement. When combined with the long lead parts procured in FY 1984, the $65.0 million of FY 1985 weapon system funds will be used to build one operational flight missile, incorporate all operational configuration changes, conduct reliability and maintainability demonstrations, procure 1 set of missile peculiar support equipment, and install a production/depot maintenance facility for the miniature homing vehicle.

Question. The cost of the ASAT program has risen steadily, raising questions about affordability. Last year, the Air Force stated that the estimated costs for the ASAT program were $1.41 billion for development, $2.64 billion for procurement, and $37.0 million for military construction. Presumably, the recent restructuring included a reestimate of that cost. How much has been provided through FY 1986 for ASAT RDT&E? For procurement? For advance procurement?

Answer. The current estimated cost for the restructured ASAT program is broken out as follows (in then-year dollars):

RDT&E	$2,024.7M
Procurement	1,795.4M
Military Construction	15.6M
Total	3,835.7M

Funding currently provided through FY 1986 is outlined below (in then-year dollars):

RDT&E	$1,261.9M
Procurement	106.3M
Advanced Procurement	28.3M

Question. What are the current total estimates for development, for procurement, and for military construction?

Development	$2,024.7M
Procurement	1,795.4M
Military Construction	15.6M
Total	3,835.7M

Question. What is the total quantity of missiles which were to be procured under the old program? What is it now?

Answer. The ASAT program documented in the FY 1986 President's Budget procured ———. The ASAT program presented in the FY 1987 President's Budget has been significantly restructured as a result of an Independent Review conducted last year. We are currently procuring ——— under this revised program to meet the near-term threat. For the far-term threat, we are investigating other technologies in addition to the air-launched system which could provide an ASAT capability. We expect to make a decision on this far-term force structure in the FY 1990/1991 time period.

Question. Given past difficulties in obtaining cost estimates, how confident are you in these latest figures? What category do you assign to them?

Answer. We are quite confident in this new estimate. It is based upon production and development proposals we received from the contractors last year, a significant amount of fact-finding and contractor interaction, and a cost review performed by an independent team in June 1985. Based on this extensive analysis, we would rate our cost estimate somewhere between a Category II (mature) and Category III (Budgetary).

Question. Provide for the record a funding profile, by Fiscal Year through to completion, for ASAT development, procurement, advance procurement, and military construction.

Answer. The FY 87 President's Budget funding profile is provided below:

	FY 87	FY 88	FY 89	FY 90	FY 91	FY 92
RDT&E	278M	226M	175M	84M		
Adv Proc	29M	145M				
Proc	2M	208M	298M	303M	291	387M
Milcon	16M					

Procurement funding includes missiles, carrier aircraft equipment, and communications electronics equipment. It should be noted that $115 million of RDT&E and $17 million of procurement funding are for the Prototype Mission Operations Center and the Mission Control Center. These funds were previously in the North American Aerospace Defense Command Cheyenne Mountain Complex program element but were transferred to consolidate the overall ASAT program.

GROWTH IN OTHER PROCUREMENT, AIR FORCE FUNDING

Question. During the recent past when funding for Defense overall has grown by significant amounts, Other Procurement, Air Force consistently has reflected an even higher growth pattern. For FY 1987, when the President's budget includes an overall increase for Defense of about 12 percent, Other procurement, Air Force continues to show a very large increase—29 percent. (From $8.6 billion in FY 1986 after Gramm-Rudman-Hollings to $10.9 billion in FY 1987). Would you please tell the Committee what it is about an account labeled "other" that gives it such high priority in the battle for *Defense* funding?

Answer. The other Procurement, Air Force (OPAF) growth from FY86 to FY87 averages 23% across the account, increasing to 29% after application of Gramm-Rudman-Hollings. Munitions increases 31%, Comm-Electronics and Base Maintenance and Support 30%, and Vehicular Equipment 10%.

Approximately half of the FY87 increase represents a corporate Air Force and DoD decision to face up to readiness and sustainability shortfalls as well as make major investments in other areas of concern to the Administration, DoD, and the Air Force, with the remainder of the increase attributable to classified programs. The higher OPAF growth pattern recognizes these priorities and makes strides in redressing years of neglect and stagnation in the funding of these essential support programs.

The President's emphasis on strategic modernization and strategic defense are foundations for the major radar, sensor, and command and control programs. The President's goal of fielding a viable chemical retaliatory capability along with effective chemical warfare defense equipment drives our repeated request to begin Bigeye binary weapon procurement and continue funding for individual and collective protection systems. Concern for quality medical care as well as medical war readiness is the impetus behind our increased medical-dental equipment buys.

Following are the main growth drivers:

War Reserve Munitions.—Our FY87 request provides for warfighting capability—an 8.1% increase in overall sortie generation with optimum munitions. With the FY87 buy, we will have 6740 more optimally loaded sorties and be able to support NATO with a total of ——— sorties of preferred munitions. The Combined Effects Munition and the GBU-15 imaging infrared guided weapon account for the majority of the growth. These munitions give a high payoff in terms of target kill and sortie effectiveness.

Vehicles.—The growth in vehicles is modest compared with the $1 billion backlog needed to fund our 18,000 plus shortage and 26,000 plus overdue replacement. This FY87 increase in funding will only enable us to prevent further deterioration of our vehicle fleet. It should be noted that the FY87 vehicle request represents negative real growth from FY85, as the FY86 Appropriation is negative 12% from FY85, even prior to the Gramm-Rudman-Hollings reduction.

Electronics-Telecommunications.—The 30% growth in this budget activity addresses critical shortcomings, particularly in our strategic warning and communications connectivity, so that the National Command Authority and Nuclear Commanders-in-Chief have timely and accurate attack warning and assessment and then are able to execute the Single Integrated Operations Plan as directed by the President. Serious deficiencies have been highlighted, which compromise our early detection of threats and our assured capability to alert, launch, and control our retaliatory forces. Upgrades to the Pave PAWS submarine launched ballistic missile warning system and completion of the West Coast segment of the Over the Horizon Backscatter Radar for early detection and warning of the bomber and cruise missile threat are top priorities in this vital area. Space is increasingly critical to our strategic deterrent posture. Increased funds for the Satellite Control Facility and the Consolidated Space Operations Center reflect the criticality of space related programs and our ability to manage and control space based systems. Growth in the TRI-TAC arena reflects continued procurement to replace and upgrade tactical comm equipment. Growth in the TRI-TAC line is responsive to urgent tactical communications requests. Since we are outnumbered in NATO, air component commanders need these tactical command and control systems so that they can allocate their tactical fighters to the highest priority targets and thereby maintain air superiority which is absoluetly essential to the outcome of the war.

Base Maintenance and Support Equipment.—Growth in this budget program is especially evident in the procurement of chemical-biological defense equipment and medical/dental equipment. With FY87 funds, we propose to buy the first large scale purchase of over 86,000 of the new MCU-2/P protective mask which will be the standard throughout the Air Force. This second generation mask will be vastly superior to the current M-17 mask in terms of out ground crews ability to operate in a toxic environment. We also propose to buy an increased quantity (144) of the Survivable Collective Protection System (SCPS). Both the new mask and the SCPS will provide a quantum jump in chem-bio protection as highlighted during the Salty Demo exercise at Spangdahlem AB, Germany, in the spring of 85. In the medical/dental area, we are requesting increased funds for modernization and replacement of hospital diagnostic equipment as well as Real Property Installed Equipment. Of special note is the urgent need to replace radiology equipment which has reached its life expectancy and must be replaced to comply with federal standards—the Health and Safety Act of 1968. At the same time, we are continuing to build our medical war readiness through procurement of four full equipped 500 bed deployable field hospitals and associated second echelon medical units.

MUNITIONS BUDGET

Question. The budget for munitions and associated equipment is $1.5 billion. Last year, you projected a fiscal year 1987 budget of $2.2 billion. How do you explain this 42 percent decrease, particularly when the Other Procurement, Air Force appropriation was by far the largest increase in the procurement title?

Answer. Although this year's budget request is below last year's projection, the Air Force has, in fact, been increasing the amount spent on munitions. The $1.5 billion request for unpowered munitions and associated equipment represents a 31% increase over the fiscal year 1986 funding. The actual munitions request this year was below last year's projection due to Air Force efforts to fund higher priority while supporting efforts to lower the Federal deficit.

Question. One of the major decreases is for 30mm training ammunition, for which $99 million was projected but only $59 million budgeted. In fiscal year 1986 $88 million was appropriated for this ammunition. What is the rationale for this reduction, and what impact will it have on training and readiness?

Answer. The training munitions account procures approximately 140 different munition items for peacetime consumption, including 30mm training ammunition. Each summer, a buy budget conference is held to determine the appropriate quantity of each item to procure in order to meet requirements. Factors such as inventory, due-ins, pipeline stock, and projected consumption are carefully examined and the buy quantities are adjusted to optimize training munitions funding.

This past summer, the decision was made, based on the above factors, to reduce the buy of 30mm training ammunition and apply the funds to other munition categories which were underfunded and could not meet requirements. Based on the consumption rate and existing inventory, the current level of 30mm training ammunition should completely support training requirements, with no compromise of readiness.

Question. Other decreases below the projection include CBU-89 TMD/GATOR (from $376 million to $194 million), FMU-112/139 fuze (from $82 million to $37 million), Durandal ($124 million to $88 million), and BSU-49 inflator retarder ($50.6 million to $27.4 million). Explain these reductions.

Answer. The total Air Force unpowered munitions request this year was below last year's projection due to Air Force efforts to fund higher priority programs while supporting efforts to lower the Federal deficit. The CBU-89 TMD/GATOR was reduced to continue procurement of other higher priority munitions. Procurement of the FMU-139 fuze was reduced due to a lower requirement for this fuze that can be satisfactorily filed by the lower procurement. The Durandal request, while lower than last year's projection, still shows an increase over the fiscal year 1986 procurement and represents a reasonable procurement of this munition. The BSU-49 inflatable retarder reduction was due to a lower war reserve materiel (WRM) requirement for this device.

Question. While the overall munitions budget is far below the projection, certain items are significantly above the projection. These include 81mm ammunition, 2,000 lb. hard target bomb, and GBU-15. Explain each of these.

Answer. The 81mm ammunition request represents a total buyout of the War Reserve Materiel (WRM) and training requirements. This action is requested since Air Force procurement rates are too small to support the production base and the Army is converting to a mortar incompatible with the Air Force weapon. The 2,000 lb. hard target bomb request is not significantly higher than the projection. In the FY 87 column of the FY 86 PB, the 2,000 lb. hard target bomb was contained in the 2,000 lb. bomb high explosive line. The GBU-15 request is higher than the projection to fill the need for additional precision attack standoff weapons.

DURANDAL AIRFIELD ATTACK WEAPON

Question. For several years, the Air Force has been buying a French-produced airfield attack weapon called Durandal. On February 16, 1986, the French Air Force attacked an airfield in Chad, by using another French weapon, the Thompson-Brandt BAP120. Do you know why the French, when faced with a real-life situation, chose to use the BAP120 rather than another airfield attack weapon?

Answer. The correct designation of the weapon used by the French in the Chad raid is the BAP 100. ———. The BAP 100 is lighter than the Durandal, thus allowing the aircraft to takeoff with more weapons, carry them farther, and provide the desired target area coverage.

Question. Is the Air Force making a mistake in buying Durandal rather than another airfield attack weapon?

Answer. No. The Air Force has a standing requirement to be capable of effectively attacking enemy airfields, including runways and taxiways, to prevent/impede enemy aircraft sortie generation. The decision in FY 82 to procure Durandal was based upon this requirement and comparative analysis/testing of available munitions and those undergoing research and development. The Durandal was selected based upon its off-the-shelf availability and performance. However, the Durandal has always been viewed as a "near term" solution to the requirement and the Air Force plans to begin production of the Direct Attack Airfield Combined Munition (DAACM) in FY 89. Although the Durandal is an acceptable weapon, the DAACM will possess a much greater capability with its combination payload of catering submunitions and area denial mines and will do more damage and close runways for a longer time, thus reducing the number of required sorties. Although procurement of the Durandal will cease in FY 88, the Air Force plans to retain it in the inventory as a secondary airfield attack munition.

Question. The fiscal year 1987 budget is $88.1 million, $36.1 million less than projected last year. What accounts for the decrease when other ammunition lines are actually higher than projected last year?

Answer. Although the fiscal year 1987 budget is lower than the projection made last year, it still represents an increase of 9% over the fiscal year 1986 funding. In light of the current fiscal guidance, the Air Force has made adjustments to prior year projections that allow overall funding reduction while still providing adequate funding to high priority programs.

Question. What are the current milestones for the successor to Drandal, and what are the Air Force plans for introducing it into production?

Answer. The successor to Durandal is the Direct Airfield Attack Combined Munition (DAACM), which is a Tactical Munition Dispenser packaged with cratering submunitions and British airfield denial mines.

Source selection for DAACM full scale development will begin this year, followed by contract award, which is currently scheduled for Feb. 1987. The production decision will be made in 4th quarter FY 1989, and deliveries will begin 4th quarter FY 1990.

BSU-49 INFLATABLE RETARDER

Question. The budget includes $27.4 million for procurement of 47,987 BSU-49 inflatable retarders. These devices are attached to MK-82 bombs to allow low level, high speed delivery. Last year, the Air Force budget anticipated changing the retarder design from a sewn approach to a braided approach. The Committee cautioned the Air Force to carefully consider costs and benefits before changing to the braided retarder. What were the results of tests for the braided retarder?

Answer. The braided retarder met the Air Force Initial Operational Test requirements—87 were tested on F4 and F111 aircraft with 11 failures of which 7 were slow deployments. The limited number of test samples could not provide the 95% reliability at 90% confidence level, but this confidence level was judged fully attainable in production.

Question. What decision has the Air Force made with respect to which type of retarder to procure in fiscal year 1986, and why?

Answer. The Air Froce has decided to procure the sewn retarder and to terminate any further efforts on the braided version. The sewn version was determined to be more cost effective due to the high facilitization and tooling costs associated with converting production to the braided version.

Question. In fiscal year 1985, a second source was competitively awarded a contract for the BSU-49. What was the unit cost of the second source retarder, and what unit cost had the Air Force already agreed to pay the developer in fiscal year 1985?

Answer. The Single Manager for Conventional Ammunition (SMCA) awarded a FY 1985 second source contract to Irvin Industries for a unit cost of $398.00. The SMCA also awarded a FY 1985 contract to the developer, Goodyear, for $608.21. As the processing activity, the SMCA has overall responsibility for acquisition strategy and provides the Air Force unit cost and lead times for budgetary purposes. The Air Force did not specifically agree to pay the developer any costs.

Question. What is the status and schedule for deliveries and first article tests for the second source? When will he be a fully qualified producer?

Answer. Based on information provided on 11 March 1986 by the Single Manager for Conventional Ammunition (SMCA), Irvin Industries presented an accelerated contract performance schedule at the 27–30 January 1986 Post Award survey. That schedule called for four units to be delivered to the government for environmental testing on 17 March 1986, a 77 unit flight test sample to be delivered the first week of May 1986, and initial production deliveries in September 1986. If this schedule, deemed very ambitious by the SMCA, is maintained, Irvin Industries could be qualified in the June-July 1986 time period. However, information received from the SMCA on 17 March 1986 was that Irvin did not deliver the four environmental test samples as scheduled and has requested a two week delay to that milestone.

Question. For Fiscal Year 1986, the Air Force can exercise an option on the second source contract, let a sole source contract to the developer, or compete the procurement when first article testing for the second source is finished. What is the chosen procurement strategy in fiscal year 1986, and why? What is the procurement strategy for fiscal year 1987?

Answer. Assuming the second source qualifies in the June–July 1986 time period, the FY 1986 program will be competed. However, in the interim the SMCA proposes to award prior year funded requirements to the current qualified producer on a non-competitive basis. This action will allow Irvin Industries time to qualify, maintain production continuity and avoid an estimated 10% premium to restart production should the developer win the competition.

The FY 1987 procurement strategy is intended to be fully competitive.

Question. The budget unit cost for fiscal year 1986 is $632 and for 1987 it is $579. What is the basis of these estimates?

Answer. Prices used in the FY 1986 and FY 1987 President's Budget request were "standard prices" provided by the Army Single Manager for Conventional Ammunition. Under the "standard pricing" concept, SMCA procures the BSU-49 inflatable retarder through the Conventional Ammunition Working Capital Fund (CAWCF). By charter, the CAWCF is a break-even fund. In FY 1987 the fund is returning excess earnings to the Air Force in the form of a negative surcharge applied to the price.

MOBILITY EQUIPMENT

Question. Last year, the Committee expressed concern in its report over the progress of the "Mobility Equipment" program. At that time, program delays were causing much of this equipment to be stored in the United States rather than in Southwest Asia.

What is the status today of negotiations with host nations for the prepositioning of this equipment?

Answer. ———.

Question. Do you expect any time in the near future that you will have sufficient agreements to locate all of the "prepositioned" equipment in Southwest Asia? If not, what steps are you taking to assure that the right equipment is prepositioned and on the spot in case of an emergency, and that the balance of the equipment will be delivered in a timely fashion?

Answer. The situation in Southwest Asia is of a volatile, dynamic nature and we are continuing to work with other agencies to resolve access issues. US Ambassadors and responsible agencies continue to seek prepositioning authority; however, it would be speculative to predict when we will have agreements sufficient to locate all of the equipment in Southwest Asia. This uncertainty does not present an immediate concern given we do not expect to have total program deliveries before the ———. The flexibility also exists to plan for partial movement of the most critical CONUS assets via strategic airlift.

Question. Leasing and construction of storage facilities was also identified as a problem with this program. Have you made progress in this area?

Answer. Facilities to accommodate equipment storage in Southwest Asia are being acquired in four basic ways: Military Construction Program (MCP), lease, build-to-lease and existing structures made available by host nation governments. For example, in ———.

Delays in acquiring facilities are tied to access problems. Once storage access has been obtained, facilities arrangements of the four basic types described above can be employed.

Question. The Committee had indications that some of this equipment was being stored "in the open". Has this problem been corrected?

Answer. Storing bare base equipment "in the open" is not a problem. In fact, some of the equipment (i.e., expandable shelter containers) were designed to be stored outdoors for economies and efficiencies in movement and storage. Early in the program, when immediate shipment to Southwest Asia was anticipated, the flexible storage containers were delivered in tri-wall cardboard boxes. With the unanticipated delays in shipping, the boxes deteriorated at the CONUS storage site and were repackaged in wooden boxes. The contents were not damaged since the flexible containers are in themselves designed for outside storage.

Question. Are you satisfied that the Air Force has in place sufficient inspection and maintenance arrangements to assure that this equipment is ready for use?

Answer. Those assets stored in the CONUS are being maintained on military installations by Air Force personnel or through interservice support arrangements. The Tactical Air Command has published TAC Programming Plan 1981-1000 which explains how the assets are to be cared for and details responsibilities at all levels.

The primary means of inspecting and maintaining equipment in the USCENTCOM Area of Responsibility will be through caretaker maintenance services contracts. Since there is no significant U.S. military infrastructure in SWA, service contracts are most desirable since they require a minimum of overhead for support and operations. Special passive maintenance/storage techniques have been developed to reduce maintenance requirements and at the same time assure the assets will operate when needed. An example of passive storage is the rubberized vacuum storage container for vehicles. General purpose vehicles will only have to be inspected on a two year cycle using the vacuum storage container. The U.S. Central Command Air Forces (USCENTAF) has published two regulations related to management, storage, inspection and maintenance of SWA equipment assets: USCENTAF Regulation 400-24, entitled War Reserve Materiel Management, and USCENTAF Regulation 77-1, entitled Preservation and Storage of Vehicles/Equipment. Given the above in place procedures and storage techniques, the Air Force is confident the equipment will be ready for use.

Question. Funding for this program was projected last year to be $103 million. The President's budget requests only $61 million, a reduction of more than 42 percent. Does this sharp drop in the funding request indicate that the Air Force is still having difficulty finding places to put this material? If not, please explain the rationale for this very large reduction.

Answer. Lack of prepositioning access was not the basis for the reduction in the FY 1987 request from that projected last year. The principal reason stems from the fact that overall Air Force fiscal levels were reduced $15.5 billion from the previous year's projection. Other considerations were: reduction in total program costs of over $200 million; rephasing of the procurement profile to avoid funding spike; and decision not to procure duplicative unit mobility equipment to configure bare base shelters for maintenance functions.

Question. The budget request for $61 million is still nearly 49 percent larger than the $41 million available for FY 1986. Why wouldn't a more modest 10 percent increase be satisfactory to continue this program in FY 1987?

Answer. Limiting the increase to 10% would result in only a $45.2 million program. Existing multiyear contracts and contracts with favorably priced FY87 options require $50.5 million. Additionally, two critically short items essential for bare base capability—the food service and sanitation units—total $8.6 million. These actions alone total $59.1 million. Thus, a growth of only 10% would not be satisfactory as it would deny full bare base capability, delay deliveries, and likely result in higher program costs due to need to resolicit bids.

INDUSTRIAL SURGE

Question. The industrial surge line item is new in FY 1987. The Air Force justification indicates that the objective of the program is to invest $63.1 million in the industrial base instead of spending $298.7 million to buy 14,500 units directly and put them on the shelf. Describe in simple terms what the program is intended to do.

Answer. Three factors interplay to determine if operational forces have the weapons and components they need to meet national emergencies. First, is the demand factor that is heavily dependent on the enemy threat, attrition rates and warfighting tactics.

Second, is a war reserves/stockpiles factor which is constrained by peacetime fiscal realities that determine how many weapon systems and spares we have on hand. Third, is an industrial/production factor. Any shortfall between what requirements are and what the industrial base can supply is called a Deployment-to-Production gap (D-to-P). In simplest terms, all warplanning is derived from making tradeoffs between these factors to have the best defense possible. Surge recognizes that sustainability is best achieved by having large quantities of weapons and munitions on hand, but this is also very expensive. The only other choice is depend on the industrial base. Surge funding ensures that the base can respond to demands in a timely manner. Many incorrectly assume the industrial base is either too slow to make any contribution to modern war scenarios or that the base will automatically be prepared to supply the tremendous increases in critical items needed during the crucial early days of conflict. Analysis indicates that the base will eventually fill D-to-P gaps. but without advance industrial preparedness measures, this occurs too late. The numbers in the question depict one possible outcome when the above type of tradeoffs are made. The 14,500 units represent how many additional Combined Effects Munitions (CEM) could be produced within one year of a decision to surge if $63.1 million dollars were available for the advanced procurement of industrial preparedness rolling inventories of long lead bottleneck items. These items were determined by rate capacity analysis and priced during competitive negotiations during the CEM source selection. The $298.7 million figure denotes how much an equivalent capability would cost if the decision were made to procure outright 14,500 CEM's as war reserve. The surge concept is vital to sustainability.

Questions. The $63.1 million is only the Other Procurement, Air Force share of a larger program called the Industrial Base Program (IBP). Tell us in general terms about the other components of this program. What is the total cost of the other components compared to the $63.1 million in Other Procurement share? Provide for the record the amount and source for each component of the IBP for FY 1987-FY1991.

Answer. There are five elements to the industrial base program. The five elements are Industrial Base Planning, Government-owned Facilities, Manufacturing Technology, Industrial Modernization Incentives Program, and Production Surge. Although all are part of the AF Industrial Base Program, these elements derive funding using 3010, 3020, 3080 and 3600 funds. Industrial Base Planning, Government-Owned Facilities, and Industrial Modernization Incentives Program use 3010 and 3020 funding depending upon if applied to aircraft or missile procurement. Manufacturing Technology uses 3600 funds. Currently 3080 funding is used for the selected surge candidate.

Industrial Base Planning.—The unifying force in industrial responsiveness. The annual Production Base Analysis identifying and analyzing critical systems and components to determine the bottlenecks that would hinder rapid production acceleration during times of national emergency. Planning ensures investments in the industrial base are considered as a viable alternative in determining the best mix of war reserves and hardware to achieve affordable defense.

Government-Owned Facilities.—Funds the thirteen government-owned contractor-operated plants the Air Force manages. Facilities funds are used to fund expansion of real property; packing, crating, & handling of government-owned equipment; periodic rehabilitation of plants beyond that which would be required of the contractor to perform as the tenant; modernization and replacement of production equipment; and environmental protection/environmental restoration to comply with current environmental laws.

Manufacturing Technology (MANTECH).—Solves critical manufacturing, productivity, and design to production transition problems. Projects are conducted under competitive contracts to U.S. industry and universities and are coordinated by the Air Force Materials Laboratory at Wright-Patterson AFB, OH.

Industrial Modernization Incentives Program (IMIP).—A joint venture between government and industry to accelerate the implementation of modern equipment in contractor facilities. Provides financial incentives for contractors to invest in productivity enhancing equipment. This program encourages contractors to make capital investments when they are not otherwise financially incentivized to do so. The government realizes savings on production programs, elimination of production bottlenecks, and improved quality and reliability.

Production Surge.—Increases DOD's ability to achieve weapon system sustainability during national emergencies. The objective is to develop a surge capacity and responsiveness to meet initial consumption in the event of a crisis or a prolonged conflict. Production surge is an investment strategy which offers a complementing alternative to having sustainability solely by buying more expensive fullup war reserves and material.

AMOUNT OF EACH INDUSTRIAL BASE COMPONENT FY 1987–FY 1991

[Dollars in millions]

	FY87	FY88	FY89	FY90	FY91	Total all years
Planning	2.9	6.3	6.3	7.2	7.3	30.0
Facilities	44.2	47.5	45.3	63.7	51.0	251.7
MANTECH	88.3	73.5	73.2	72.6	71.9	379.5
IMIP	15.5	27.6	30.2	31.4	33.6	138.3
Surge	19.2	0	0	0	0	19.2
Total	170.1	154.9	155.0	174.9	163.8	818.7

Question. The justifications indicate that funding is for "advance procurement of long lead items for rolling inventory of pacing components." It sounds like this proposal flies in the face of the Committee's long standing policy of full funding. Is that the case? If not, please explain.

Answer. Full funding policies allow advance procurement under two circumstances—to procure long lead parts and to allow for economic ordering quantities. The surge concept provides long lead parts for industrial preparedness reasons. All parts are used in the normal life of the program through the rolling inventory concept. We see no violation of full funding policies.

Question. The budget request is for $19.2 million in FY 1987, about one-third the $63.1 million requirement. No funds are requested in any future year from FY 1988 to FY 1991. Please explain this funding pattern.

Answer. The $19.2 million is provided by OSD surge wedge funds which are provided to the Services through the OSD surge candidate board. OSD has not provided surge wedge funds for the out years. The Air Force surge program was zeroed in FY 1986 and as a result, the Air Force is reluctant to risk very limited out year TOA if Congress does not support the program. As a new initiative, even though surge gives us increased sustainability, the program is experiencing normal cautiousness. We are approaching the program incrementally and in close coordination with ASD (A&L) who provide the guidelines and groundrules for surge candidates. As the program becomes more defined, it will be expanded to other critical items and be reflected in future Air Force funding profiles.

Question. The Air Force justifications indicate that the Air Force wants to validate the surge concept before applying it to other critical components. Shouldn't the funding to develop a "surge concept" be requested under the Defense Production Act line item? Please explain the distinction.

Answer. The Air Force evaluates all industrial base initiatives to ensure the appropriate tools are used to correct deficiencies identified in the industrial base. Both the production surge program and the Defense Production Act provide for enhanced production base capability during a national emergency. The Defense Production Act, while considered with the Air Force industrial base program, is directed primarily at the basic materials level in the production process and is accomplished through purchase commitments of end products. The production surge program provides for the purchase of higher level long lead time components such as integrated circuits. In addition, through use of the rolling inventory concept, peacetime purchase comitments are not increased, but a substantial capability exists to surge should a national emergency arise.

Question. How will the validation be done, and what is the time frame for it? Provide for the record a description of the milestones and the date for each in the validation process. What is the magic about $19.2 million for the validation process? Why couldn't the concept be proved with $5 million?

Answer. The requested FY87 funds will do more than just validate the surge concept. They will give the Combined Effects Munitions (CEM) program an increased sustainability capability. A complete surge capability to match the required demand for CEM's during sustainability scenarios cost $63.1 million. Partial capability is possible with less funds. The funds could be $19.2 million as requested, or any level up to the total surge ability needed of $63.1 million. The $19.2 million level was selected with the help of an OSD Surge Candidate Board that screened Service projects. Surge is recognized by OSD, the JCS, industry, and the Air Force to be a valid concept already. However, with great demands being placed on Air Force TOA, we are approaching surge incrementally. Surge gives us great sustainability potential that would allow the Air

Force to have preferred systems and munitions available in the quantities needed during critical stages of long war scenarios. Still, the surge concept is relatively new. We have never spent funds in this way, nor funded rolling inventories for sustainability reasons. As funds are used for this purpose the program offices will monitor the rate capacities at the surge candidate plants. We want to be sure that the identified bottlenecks are actually solved and the new capabilities we are projecting actually materialize. Validation will occur via throughput analysis that is done periodically as part of normal manufacturing/production surveillance. All Air Force programs are required by regulation to consider industrial preparedness impacts in their acquisition planning. The Air Force objective is to ensure all programs recognize the importance of mobilization/sustainability planning and that program managers carefully weigh competing objectives of productivity, preparedness, high performance, quality and costs. Surge is being developed as another acquisition tool that when used properly and cautiously can produce a superior deterrent force at a lesser cost than would be required by stockpiling.

[CLERK'S NOTE.—End of questions submitted for the record.]

Mr. HEFNER. The committee stands adjourned until 1:30 this afternoon.

WEDNESDAY, APRIL 23, 1986.

PROCUREMENT POLICIES AND PRACTICES

WITNESSES

HONORABLE JAMES P. WADE, JR., ASSISTANT SECRETARY OF DEFENSE FOR ACQUISITION AND LOGISTICS

REAR ADMIRAL STEPHEN F. LOFTUS, USN, COMPTROLLER, NAVAL SEA SYSTEMS COMMAND

ELEANOR SPECTOR, DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR PROCUREMENT

OPENING REMARKS

Mr. CHAPPELL. The hearing will please come to order. This morning the committee considers a number of issues concerned with the procurement policies and practices of the Department of Defense. The committee will also discuss the findings and recommendations of the Packard Commission dealing with reform of Defense acquisition, management reforms of spare parts acquisition, automation of defense logistics systems, DOD profit policy and other issues.

Spare parts funding is a particular concern to the committee. The good news is in Secretary Weinberger's statement to the committee that DOD has documented $2.5 billion in savings in fiscal years 1984 and 1985 due to spares management reforms, and as a result, $11.1 billion has been reduced from 5-year spares funding estimates since fiscal year 1984.

However, the bad news is that the fiscal year 1987 spares funding requested of Congress—which is $8.6 billion—is much lower than the $13 billion estimated for fiscal year 1987 in last year's budget.

The Air Force, in particular, reports in its budget that its aircraft replenishment spares funding only meets 56 percent of the requirement. The committee may have a problem either with how the requirements are determined, or with the Administration's priority for funding new acquisitions at the expense of readiness.

The committee is pleased to welcome the Honorable James P. Wade, Assistant Secretary of Defense for Acquisition and Logistics. In the interest of time, please briefly summarize your prepared statement, which will be placed in the record in full.

Dr. Wade, would you begin?

OPENING STATEMENT BY DR. WADE

Mr. WADE. Thank you, Mr. Chairman and members of the committee.

As you suggest, I will place my prepared statement in the record, and cover the key points of the specific topics that you and your staff members have asked me to address, namely multiyear procurement, warranties, streamlining, competition, spares, cost principles, war reserves, and some comments on the Packard Commission report.

Mr. **Chappell**. Just a few simple issues.

Dr. **Wade**. Yes, sir.

Let me summarize.

With regard to multiyear procurement. In my opinion, this has indeed been a success story over the past several years. Of the 60 programs that the Department has requested for multiyear funding by the Congress, the Congress has approved 40 of these requests and we expect a potential savings here on the order of $6.2 billion.

For fiscal year 1987, we are asking approval for an additional seven new programs and these programs, if fully implemented, would offer the potential for savings of an additional $2.1 billion.

With regard to warranties, we have implemented our warranty procedures with minimal difficulties. I think it is too soon to determine the cost effectiveness of warranties, because most of these programs are in their initial stages and it will take several more years to ascertain the real value we gain by this new procedure.

On the subject of streamlining, the Department's new streamlining program has been successfully reducing the number of overly detailed, up-front specifications used in our RFPs, resulting in significant savings of time and money.

For example, the total size of the RFP for the U.S. Army LHX T-800 engine was reduced by 75%; and the Navy's V-22 cost avoidance is estimated on the order of $355 million savings in the developmental stage alone.

To the subject of competition. Competition that is again up in the Department. The percentage of contract award dollars placed competitively in 1985 was 48.4 percent, vis-a-vis 42.9 percent in 1984.

The percentage of actions completed increased to 71.6 percent in fiscal year 1985 from 63.1 percent in 1984.

To the subject of spares. The Department has shown continuing progress in improving the management and acquisition of our spare parts program.

As part of the breakout program in the last year, we reviewed over 250,000 items of which we designated approximately 54,000 for full and open competition and another 51,000 for purchase from the actual manufacturer.

On the subject of Cost Principles. DOD recently reviewed its 48 cost principles, and 36 failed one or more of the tests of our examination effort, that is the test for clarity, effectivity, practicality and specificity. Immediate corrective action has been taken on 12 of these 36. Twelve more are in the process of being changed, and additional information is being gathered on the remaining twelve.

As to war reserves, as a summary comment, all aspects of our military capability have improved over the past five years. The detailed statement provides in clear form, the number of specific improvements that the Department has achieved over the past four years.

I would note in this area the severe budget pressures being felt at this time, and that tells us that here we have to give constant attention to assure the high degree of readiness that is needed in our forces today.

I would like to take a few minutes to discuss the acquisition section of the Packard Commission report, which I personally support.

The Commission underscored an important view of the Congress and the DOD as partners. The Undersecretary of Defense for Acquisition is indeed a good idea that leads to greater centralization and accountability for acquisition policy, decisionmaking and execution over-sight.

The Commission recommended a direct line from this new USDA to the service acquisition executives; and, of course, the Commission's recommendation to establish an alternative personnel management system for our acquisition workforce is an idea that I have been endorsing for some time.

The implementation of the Packard Report is underway within the DOD as are a number of other improvement programs. The next acquisition area to work on, in my personal judgment, is in the area of requirements. This is an area that was addressed briefly by the Packard Commission, but much more work is required in the coming months.

I would like to summarize the following note. We need to continue to stress the importance of "competition for excellence" in all our programs. Our cultural approach in the past has been generally one in which we look towards a minimally satisfactory floor for the quality of the technical proposal and go to the decision bottom line on cost.

We need to change the culture emphasis to truly improve quality, an improved sense of reliability, and overall durability. This would be more of an essential format in reference to cost as the pre-eminent selection criteria.

Thank you, Mr. Chairman. I am now ready to take your questions.

Mr. Chappell. Thank you, Mr. Wade.

[The statement of Mr. Wade follows:]

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE. IT IS A PLEASURE TO BE HERE TO DISCUSS DOD PROCUREMENT POLICIES AND PROCEDURES. IT IS MY UNDERSTANDING THAT YOU HAVE ASKED ME TO COMMENT ON MULTIYEAR PROCUREMENT (MYP) WARRANTIES, STREAMLINING, COMPETITION, SPARES MANAGEMENT, COST PRINCIPLES, AND WAR RESERVES. I WILL FOLLOW THAT DISCUSSION WITH SOME THOUGHTS ON THE RECENT PACKARD COMMISSION RECOMMENDATIONS.

MULTIYEAR PROCUREMENT

OUR USE OF THE MULTIYEAR PROCUREMENT CONTRACTING TECHNIQUE ON MAJOR SYSTEMS AND PROGRAMS, WHICH EMPLOYS ECONOMIC ORDER QUANTITY (EOQ), CONTINUES TO BE A SUCCESSFUL APPROACH THAT RESULTS IN BOTH SAVINGS AND STABILITY. THIS YEAR THE DEPARTMENT HAS PROPOSED SEVEN CANDIDATE PROGRAMS THAT COULD SAVE OVER TWO BILLION DOLLARS. THESE PROGRAMS INCLUDE: UH/EH-60 AIRFRAME (FOLLOW-ON TO AN EXISTING MYP), F/A-18 AIRCRAFT, PATRIOT MISSILE, STINGER MISSILE, HARM MISSILE, MK-45 GUN MOUNT, AND THE DEFENSE SUPPORT PROGRAM. SINCE THE INITIAL USE OF MYP IN 1982 THE DEPARTMENT HAS SUBMITTED 60 MULTIYEAR CANDIDATES AND CONGRESS HAS APPROVED 40 OF THESE PROGRAMS. FOR THESE 40 APPROVED PROGRAMS WE EXPECT POTENTIAL SAVINGS OF 6.2 BILLION DOLLARS. LAST YEAR EIGHT OF OUR TEN CANDIDATE PROGRAMS WERE APPROVED. WE HOPE WE CAN CONTINUE TO ENJOY CONGRESSIONAL SUPPORT FOR THIS VALUABLE CONTRACTING TECHNIQUE.

WARRANTIES

OUR IMPLEMENTATION OF STATUTORY DIRECTION FOR WARRANTIES ON WEAPON SYSTEMS IS WELL UNDERWAY. THE DEFENSE ACQUISITION REGULATORY SYSTEM ISSUED POLICY GUIDANCE IN COMPLIANCE WITH THE DEFENSE PROCUREMENT REFORM ACT. THE SERVICES HAVE ISSUED THEIR GUIDANCE IN SUPPORT OF THESE EFFORTS TO INSTITUTIONALIZE THE USE OF WARRANTIES IN THE WEAPON SYSTEM ACQUISITION PROCESS.

WE ISSUED ONE WARRANTY WAIVER IN FY 1985 BECAUSE WE FOUND IT NECESSARY FOR THE ACQUISITION OF 14 RAPIER MISSILE FIRE UNITS PURCHASED FROM THE UNITED KINGDOM.

SINCE MOST OF OUR EQUIPMENT UNDER WARRANTY IS STILL SEVERAL YEARS AWAY FROM DELIVERY, I CANNOT PROVIDE ACCURATE DATA ON THE COST EFFECTIVENESS OF WARRANTIES UNTIL THAT TIME.

STREAMLINING

THE OBJECTIVE OF THE ACQUISITION PROCESS IS TO FIELD AFFORDABLE SYSTEMS THAT ARE CAPABLE, EFFECTIVE, RELIABLE, AND SUPPORTABLE. THE STREAMLINING INITIATIVE RECOGNIZES THAT COST-EFFECTIVE APPLICATION, AND TAILORING OF SPECIFICATIONS IS INHERENTLY PART OF THE DESIGN AND DEVELOPMENT PROCESS. FOR EXAMPLE, THE TOTAL SIZE OF THE RFP FOR THE U.S. ARMY LHX T-800 ENGINE WAS REDUCED 75% AND THE U.S. NAVY V-22 COST AVOIDANCE IS ESTIMATED AT $355 MILLION IN DEVELOPMENTAL SAVINGS. STREAMLINING HAS BEEN A SUCCESSFUL INITIATIVE OF THE DEPARTMENT OF DEFENSE, WHICH I INTEND TO VIGOROUSLY PURSUE.

COMPETITION

IMPROVING COMPETITION IS A KEY OBJECTIVE WITHIN THE DEPARTMENT OF DEFENSE. WE AWARDED CONTRACTS WORTH OVER $163 BILLION IN FY 1985 THROUGH APPROXIMATELY 15 MILLION PROCUREMENT ACTIONS.

THE PERCENTAGE OF CONTRACT AWARD DOLLARS PLACED COMPETITIVELY IN FY 1985WAS 48.4% VERSUS 42.9% FOR FY 1984. THE PERCENTAGE OF ACTIONS COMPETED INCREASED TO 71.6% IN FY 1985 FROM THE 63.1% ACHIEVED IN FY 1984.

SPARES MANAGEMENT IMPROVEMENT

THE DEPARTMENT OF DEFENSE SPARES MANAGEMENT IMPROVEMENT PROGRAM (SMIP) IS THE FORMAL VEHICLE DESIGNED

TO MONITOR AND CONTROL ALL OF THE ACTIONS AND INITIATIVES UNDERWAY TO IMPROVE THE ACQUISITION AND MANAGEMENT OF SPARE PARTS. IT CONSISTS OF OVER 500 SEPARATE INITIATIVES AND CONSTITUTES A COMPREHENSIVE AND DETAILED ACTION PLAN THAT ADDRESSES ALL ASPECTS OF SPARE PARTS MANAGEMENT. DURING FY 1985, THE FIRST FULL YEAR OF OPERATION, THE SMIP HAS PROVIDED NET COST SAVINGS/AVOIDANCES DOCUMENTED TOTALED $1.3 BILLION, FOR A COMBINED FY 1984 AND FY 1985 NET TOTAL OF $2.5 BILLION.

THE DEPARTMENT HAS SHOWN GREAT PROGRESS IN IMPROVING THE MANAGEMENT AND ACQUISITION OF ITS SPARE PARTS. AS PART OF OUR BREAKOUT PROGRAM WE REVIEWED OVER 250,000 ITEMS, OF WHICH WE DESIGNATED APPROXIMATELY 54,000 FOR FULL AND OPEN COMPETITION AND ANOTHER 51,000 FOR PURCHASE FROM THE ACTUAL MANUFACTURER. IN FY 1985, 3.6 MILLION LINE ITEMS EXPERIENCED PRICE CHANGES; 91% OF THOSE LINE ITEMS -- SOME 3.3 MILLION -- DECREASED IN PRICE.

COST PRINCIPLES REVIEW

IN JUNE 1985, THE DOD COUNCIL ON INTEGRITY AND MANAGEMENT IMPROVEMENT, CHAIRED BY THE DEPUTY SECRETARY OF DEFENSE, APPROVED AN INITIATIVE FOR THE REVIEW OF THE CURRENT FEDERAL ACQUISITION REGULATIONS (FAR) CONTRACT COST PRINCIPLES BY AN OSD TASK FORCE. THE PURPOSE OF THIS REVIEW WAS TO ASSURE THAT THE PRINCIPLES, WHICH HAD NOT UNDERGONE A COMPLETE COMPREHENSIVE REEXAMINATION SINCE 1960, ARE CLEAR AND CAPABLE OF BEING IMPLEMENTED AS INTENDED.

EACH OF THE 48 PRINCIPLES WAS EXAMINED FOR SPECIFICITY, CLARITY, PRACTICALITY, AND EFFECTIVENESS. IN ADDITION, CONSIDERATION WAS GIVEN TO A NUMBER OF INFLUENCING FACTORS SUCH AS LEGISLATION (THE 1986 DOD AUTHORIZATION AND APPROPRIATIONS ACTS), RECENT LITIGATION, AND PENDING FAR CASES FOR CHANGE TO THE EXISTING REGULATIONS.

THE TASK FORCE FOUND SOME AMBIGUITY WITH MOST OF THE PRINCIPLES. THIRTY-SIX FAILED ONE OR MORE OF THE TESTS IN THE EXAMINATION EFFORT, AND OF THE 36, IMMEDIATE CORRECTIVE ACTION WAS TAKEN ON 12. TWELVE MORE ARE IN THE PROCESS OF BEING CHANGED THROUGH THE FAR CASE PROCESS AND ADDITIONAL INFORMATION IS BEING GATHERED ON THE REMAINDER FROM GOVERNMENT AND INDUSTRY SOURCES.

WAR RESERVES

ALL ASPECTS OF OUR MILITARY CAPABILITY HAVE IMPROVED OVER THE PAST FIVE YEARS. THE ADDITION OF AIR LAUNCHED CRUISE MISSILES ON 100 B-52s AND OTHER IMPROVEMENTS HAVE RAISED THE STRATEGIC BOMBER CAPABILITY TO DESTROY HARD TARGETS BY 90% SINCE 1980. OUR INTERCONTINENTAL BALLISTIC MISSILE (ICBM) CAPABILITY AGAINST VERY HARD TARGETS HAS RISEN 80% OVER THE SAME PERIOD. THE SUBMARINE LAUNCHED BALLISTIC MISSILE (SLBM) INVENTORY HAS GROWN BY 36% AND THE WARFIGHTING CAPABILITY OF ACTIVE AND NATIONAL GUARD DIVISIONS INCREASED BY 17% AND 20% RESPECTIVELY, BETWEN 1980 AND 1984. THE WARFIGHTING CAPABILITY OF NAVAL FORCES HAS BEEN MARKEDLY IMPROVED BY INCREASES IN THE QUANTITY AND QUALITY OF SHIPS. NAVAL AVIATION HAS SEEN A STEADY INCREASE IN THE MORE CAPABLE F-14, F-18, P-3C, LAMPS III, AND A-6E AIRCRAFT IN THE FLEET. NEW OR IMPROVED AIRCRAFT WEAPONS SUCH AS AIM-7M, AIM-9M, HARPOON, IIR MAVERICK, AND STANDARD ARM MISSILES PROVIDE LONGER STANDOFF RANGES AND LETHALITY. OUR SEALIFT SURGE CAPABILITY HAS ROUGHLY TRIPLED FROM FY 1980 TO FY 1986.

WE ARE ALSO IMPROVING THE QUALITY OF WAR RESERVE REQUIREMENTS FOR SPARES. LAST YEAR WE IMPLEMENTED A NEW COMPUTATIONAL POLICY THAT WILL IMPROVE THE VALIDITY AND ACCURACY OF THE REQUIREMENTS SUBMITTED IN FUTURE BUDGETS.

PACKARD COMMISSION

TODAY, I WILL ONLY TAKE A FEW MINUTES OF THE COMMITTEE'S TIME TO CAST THE COMMISSION'S ACQUISITION-RELATED

RECOMMENDATIONS IN OUR PERSPECTIVE AND COMMENT BRIEFLY ON THEIR IMPORTANCE, BEFORE FIELDING YOUR QUESTIONS.

FIRST, I MUST APPLAUD THE COMMISSION'S CLEAR-EYED VIEW OF CONGRESS AND DOD AS PARTNERS IN DEFENSE ACQUISITION IMPROVEMENT. WE HAVE, AS THE COMMISSION NOTED, JOINTLY MADE SIGNIFICANT IMPROVEMENTS ALREADY, AND MUST CONTINUE TO ACT TOGETHER IF WE ARE TO ATTAIN THE EXCELLENCE IN ACQUISITION MANAGEMENT THAT IS OUR COMMON GOAL.

AMONG THE MOST SIGNIFICANT OF THE COMMISSION'S RECOMMENDATIONS IS THE CREATION OF THE POSITION OF UNDER SECRETARY OF DEFENSE FOR ACQUISITION. I HAVE LONG SUPPORTED GREATER CENTRALIZATION AND ACCOUNTABILITY FOR ACQUISITION POLICY AND DECISION MAKING, AND THIS WILL BE A SIGNIFICANT STEP IN THAT DIRECTION.

A RELATED AND EQUALLY IMPORTANT STEP IS THE COMMISSION'S RECOMMENDATION TO CENTRALIZE SERVICE ACQUISITION RESPONSIBILITYWITHIN A SERVICE ACQUISITION EXECUTIVE AND TO STREAMLINE PROGRAM MANAGER REPORTING. WE ARE IN THE INITIAL STAGES OF IMPLEMENTING THIS RECOMMENDATION, WHICH WILL SHORTEN THE REPORTING CHAIN FOR PROGRAM MANAGERS.

I ALSO APPLAUD THE COMMISSION'S ILLUMINATION OF THE NEED FOR SERVICE ACQUISITION EXECUTIVES TO HAVE A DIRECT CHANNEL TO THE UNDER SECRETARY OF DEFENSE FOR ACQUISITION. THE SYSTEM OUTLINED BY THE COMMISSION, NOW BEING IMPLEMENTED BY THE DEPARTMENT, WILL PROVIDE THE KIND OF COMMUNICATION, COORDINATION, AND SUPERVISION REQUIRED TO ENSURE A SINGLENESS OF POLICY WITHIN THE ENTIRE DEFENSE DEPARTMENT. THIS IS AN IMPORTANT MOVE IN A CRUCIAL DIRECTION.

ANOTHER IMPORTANT ASPECT OF THE COMMISSION'S REPORT IS THE RECOGNITION THAT REFORMING THE DEFENSE DEPARTMENT'S ACQUISITION EFFORT IS IN ITSELF INSUFFICIENT TO ACCOMPLISH THE GOAL OF A MORE STABLE AND EFFICIENT ACQUISITION SYSTEM.

CONGRESS IS A FULL PARTNER IN ACQUISITION AND MUST ALSO ATTEND TO THE RECOMMENDATIONS OF THE COMMISSION. THE RECOMMENDATIONS FOR TWO-YEAR BUDGETS, KEYING MAJOR PROGRAM FUNDING APPROVAL DECISIONS TO PROGRAM MILESTONES, AND FOCUSING INCREASINGLY ON STRATEGIC AND OPERATIONAL CONCEPTS INSTEAD OF LINE ITEMS DURING BUDGET DELIBERATIONS ARE RECOMMENDATIONS THAT SHOULD BE CONSIDERED BY THIS COMMITTEE AND YOUR COLLEAGUES THROUGHOUT THE CONGRESS. THESE SUGGESTIONS, AND THE POSSIBLE RECODIFICATION OF ACQUISITION LEGISLATION INTO ONE LAW, WHICH THE OFFICE OF MANAGEMENT AND BUDGET IS LOOKING INTO, WILL PROVIDE THE MEANS FOR INCREASED STABILITY IN DEFENSE FUNDING, PROPER AND EFFECTIVE CONGRESSIONAL OVERSIGHT, AND MORE CREATIVE AND EFFICIENT ACQUISITION MANAGEMENT, I URGE YOU TO CONSIDER THESE IMPROVEMENTS, FOR I BELIEVE THEY HAVE GREAT MERIT.

ANOTHER ELEMENT OF THE COMMISSION'S RECOMMENDATIONS IS THE FOCUS ON IMPROVING THE MANAGEMENT OF DEFENSE ACQUISITION PERSONNEL. AS YOU KNOW, I HAVE BEEN A STRONG ADVOCATE FOR AN ALTERNATE PERSONNEL SYSTEM THAT PROVIDES THE MEANS TO ENHANCE THE QUALITY OF OUR ACQUISITION CADRE. THIS ADMINISTRATION IS NOW PURSUING A PROPROSAL FOR ALTERNATIVE MANAGEMENT THAT WILL FREE THE SECRETARY OF DEFENSE TO IMPLEMENT STANDARDS FOR OUR ACQUISITION PERSONNEL, DEVELOP EDUCATIONAL AND TRAINING PROGRAMS, ENSURE A MORE EFFECTIVE REWARD SYSTEM, AND -- FINALLY -- CREATE CAREER EXPECTATIONS AND PATTERNS IN KEEPING WITH THE HIGH QUALITY OF CIVILIAN AND MILITARY PERSONNEL IN OUR ACQUISITION RANKS.

THE PACKARD COMMISSION ALSO ENDORSED OUR COMPETITION ENHANCEMENT, STREAMLINING, AND OTHER IMPROVEMENT PROGRAMS.

WE WILL MAINTAIN OUR EFFORT IN THESE AREAS. AS YOU KNOW, WE -- DOD AND CONGRESS -- HAVE BEEN VERY SUCCESSFUL THUS FAR. CONSIDER THESE FEW EXAMPLES: COMPETITION HAS INCREASED BY 37% SINCE 1981; ANNUAL COST GROWTH ESTIMATES FOR MAJOR PROGRAMS ARE DOWN FROM 14% IN 1981 TO LESS THAN 1% IN THE LAST TWO YEARS. WE HAVE SEEN THE VALUE OF OUR EFFORT, AND WE WILL NOT SLACKEN OUR PACE.

THE COMMISSION'S OTHER RECOMMENDATIONS ARE ALSO BEING IMPLEMENTED -- WE WILL REDUCE OVERSIGHT AND AUDIT OVERLAP, WE WILL CONTINUE OUR AGGRESSIVE ENFORCEMENT OF THE LAW; AND WE WILL SEEK NEW AND CREATIVE MEANS OF ENHANCING CONTRACTOR SELF GOVERNANCE.

IN CLOSING, MR. CHAIRMAN, LET ME OFFER ONE ADDITIONAL PERSPECTIVE ON THE PACKARD COMMISSION'S RECOMMENDATIONS. WE IN THE DEPARTMENT OF DEFENSE -- AND MOST CERTAINLY WITHIN THE ORGANIZATIONS UNDER MY PURVIEW -- FULLY RECOGNIZE THAT THE COMMISSION REPORT PROVIDES US WITH ANOTHER TOOL IN OUR PURSUIT OF EXCELLENCE IN ACQUISITION. AND THAT IS HOW WE INTEND TO USE THE COMMISSION'S RECOMMENDATIONS.

WE DON'T TALK MUCH ABOUT IT -- PERHAPS WE SHOULD MORE -- BUT WE IN DEFENSE ACQUISITION HAVE ONLY THAT ONE GOAL; EXCELLENCE. IT IS TOWARD THAT END THAT I HAVE PROPOSED IDEAS FOR IMPROVING THE SYSTEM IN THE PAST, AND IT IS TOWARD THAT END THAT WE WILL IMPLEMENT THE PACKARD COMMISSION'S RECOMMENDATIONS. WE WILL NOT LOSE SIGHT OF THAT GOAL AND WE ARE PREPARED TO WORK WITH YOU AS YOU SEEK THE SAME GOAL.

MR. CHAIRMAN, I THANK YOU AND THE MEMBERS OF THE COMMITTEE FOR THIS OPPORTUNITY TO ADD MY PERSPECTIVE TO YOUR REVIEW OF THE PACKARD COMMISSION'S RECOMMENDATIONS. I STAND READY TO ANSWER YOUR QUESTIONS ON MY COMMENTS.

PACKARD COMMISSION

Mr. **CHAPPELL**. What specific policies are you in the process of implementing that come from the Packard Commission at this time?

Dr. **WADE**. Mr. Chairman, each one of the basic recommendations from the Packard Commission are now being reviewed and worked in the context of how best to put them into effect in the Department of Defense.

Mr. **CHAPPELL**. How does the Commission intend to change competition, and what are you doing now that is going to be changed by the implementation?

Dr. **WADE**. Two aspects. One is to look more towards the use or the utility of commercial piece parts that are available from the open market.

Mr. **CHAPPELL**. Off-the-shelf items?

Dr. **WADE**. Yes, in this context, when you have a price determined by the market itself, you have already competition in its own right.

Second is the understanding that DOD competition for piece parts, spare parts, solely on the lowest cost over the long term may not be sound.

Overall, such a focus is not going to, I think, be to the best interest of the DOD. There should be the recognition that history of performance by a contractor in the context of how well he has performed, the quality and reliability of his product, is just as important to that of costs in the sense of providing the kind of spare parts the DOD needs in its weapon systems.

So there is the broader aspect of looking more toward the use of off-the-shelf products, and the importance in recognizing that in addition to competition for price, "competition for excellence" in the product itself is important.

Mr. **CHAPPELL**. Will you be able to do that to make sure you have the high standard of quality?

Dr. **WADE**. We have to make sure that is part of the selection criteria. We have a Defense Science Board effort underway chaired by Dr. Bill Perry, looking into that problem in some detail. We hope to be able to report back to you this fall on the outcome and recommendations of this effort.

Mr. **CHAPPELL**. Can you give us examples of spare parts that you are going to be able to compete separately—what are the parts that you are going to compete?

Dr. **WADE**. One attempt is to compete from the start as much as we can. By looking at, for example, our new streamlining procedures, where we examine upfront more of the performance requirements that are needed or desired in a new weapon system rather than detailed specifications, which would allow the contractor working with the DOD to trade off cost and performance, and part of that process will include what is available commercially to fill elements of the requirement.

But we also have to be clear that in some areas, new R&D programs, which have an objective to provide the best leading edge technology for our weapon systems, must not be overly downgraded in their place for selection purposes—here commercial availability is not appropriate.

Mr. **Chappell.** You said you had a tremendous increase in the number of items which you will now compete. There is a logistics study that says that you are competing only about ten percent of your spare parts at this time. Do you agree with that study?

Dr. **Wade.** No, sir.

Mr. **Chappell.** Let's go then to percentage.

What percentage do you compete at this point, how much by dollar amounts, and then by number of units, what percentage?

Dr. **Wade.** In fiscal year 1985, we competed 48.4 percent in terms of dollars, and in contract actions, the number was 71.6 percent. This is a significant increase over 1984. In this context, competition is being pursued successfully by the Department of Defense.

Mr. **Chappell.** Let me read the quote. This is a Military Logistics Forum article. It states that, "Even where DOD claims to compete spare parts contracts, this rarely means an open competition with the award going to the lowest bidder. Less than ten percent of the spare parts purchased by DOD are designated for purchase through open competition. What DOD means by 'competition' is restricted competition with nonsensical prequalification requirements that are in many cases ultimately recommended and implemented by large original equipment manufacturers. This system has effectively limited competition for most spare parts to the prime contractor and the subcontractors that look to the prime for their livelihood."

Comment on that if you will.

Dr. **Wade.** I need to look at the article in detail, Mr. Chairman, but I would also note that in reference to the breakout program that we went through last year, that we, during the course of the past 12 months, examined 250,000 items. Of those 250,000 items, we broke out 54,000 for full and open competition, and for another 51,000, we skipped the prime and went directly to the manufacturer. We are making continuing progress in this area, and we are quite proud of it.

Mr. **Chappell.** I have seen some of the work you have done and I do commend you on that. I think you have done a good job of breaking out the parts that can be better competed with small contractors who have the capability and you don't have to gear up a big prime contractor for doing those things that can be done by capabilities in place.

You are continuing that to the point of maximum efficiency?

Dr. **Wade.** Yes. In addition to looking at our needs towards competing for lower prices, we also now have to put more attention towards criteria which address the overall quality excellence of the program; there should be as much emphasis on reliability and quality as there is on lowest price.

Mr. **Chappell.** There has been criticism to the point saying if it wasn't invented or decided by the Pentagon, it just won't be purchased.

Does this mean we are getting away from the idea that you have got to use screws and bolts and even many other items that have called for specific designs, specific sizes; are we going to be able to get more and more to buy those things off the shelf for lots of savings?

Dr. WADE. Yes, sir. The right approach here is at the beginning of the design process you ascertain what is available in the commercial market off the shelf and maximize as appropriate your design content. At the same time, where there are system components that have the need for specified military-only hardware componentry, you make a conscious decision to go in that direction rather than the other way around, which has been the approach in use today.

Mr. CHAPPELL. We have been taking about 15 years to bring a major weapon system on line. There is some indication that with certain things that are happening we can cut that time in half.

Do you agree with that?

Dr. WADE. One half would be a goal, but we should certainly be able to cut it back significantly. Whether one half is the right place to shoot for, I think the right approach is to recognize we have been taking too much time upfront in the acquisition process, in the requirements formulation phase, the review thereafter, the reviews or the Hill, milestones zero and one, that is in the area that has stretched out over the years. I think the Packard Commission recognized that. We have also recognized it.

Mr. CHAPPELL. We all agree it has been taking too long.

Dr. WADE. Absolutely.

Mr. CHAPPELL. Do you agree with the complaint of some of the contractors, I notice McDonnell in particular saying that we just inspect everything to death and that they have about a thousand people in their plants at all times inspecting. Consequently, they are spending thousands and thousands of man-hours just trying to furnish information for inspection—do you have any comment on that?

Dr. WADE. Yes, sir. We need some correction here.

I would observe here that there have been faults on both sides. I think some of our product in the context of quality was poor across the board. I think the funding was such that we were not provided adequate money in the program upfront so shortcuts had to be found. I think there was a need for better and more overall auditing and at the same time as we see the success of the program today, it is quite clear that we ought to pull back somewhat for the future.

What has ended up here, in my judgment, is a result of all the added regulations provided by the Congress and within the DOD. We have made our program managers into technocrats rather than true managers.

I think we need to start relieving our managers of all the myriad peg points, multi-layer reporting, schedules and dates for written documents, and allow him to manage his programs. Part of that would be some relief in how many audits are conducted on him and related program activities.

Mr. CHAPPELL. In other words, you think that you need to set the specifics and give him more latitude to bring that product to specification, and if he doesn't do it, we don't buy or the contractor has to provide the improvement at his expense?

Dr. WADE. Yes, sir. You make him accountable.

Mr. CHAPPELL. Don't you think that process ought to give you a better product?

Dr. **Wade**. Absolutely.

Mr. **Chappell**. I commend you on that and I hope something can be done in that direction. I think we can just take so much responsibility away from the manufacturer by inspecting every point, that he loses a sense of his responsibility.

DSARC Process

Mr. **Chappell**. What about DSARC? Is that working to evaluate properly from time to time the weapon systems, to know when it is a go or no-go situation?

Dr. **Wade**. First of all, the DSARC process addresses only the major programs. The minor programs are managed by the services. I think overall the DSARC process today works well. It has been improved significantly over the past several years; it is certainly the main instrument by which the Secretary of Defense can review and provide his direction for our lake programs. But as I said earlier, the system needs improvement at the front part, the requirements formulation. We need to make certain that the need has also been addressed correctly by using commands.

Overall the DSARC process, is working well right now, and there are always ways we can make it better.

Procurement Reform

Mr. **Chappell**. We have talked up to this point about competing more parts, breaking out more parts for competition, buying more off the shelf. We have been talking about shortening the period for producing a major weapon system and putting more responsibility on that contractor to come forth with a good product to begin with.

What is your thinking with reference to some of the so-called procurement reforms that are to be written in the contract, like "should cost"?

Dr. **Wade**. There is a place for "should cost". Its use is needed for many of our new major programs. I think "should cost" is often misunderstood. "Should cost" is when you take a team of 12 to 14 government experts, and send them into a plant. They go through the plant and the contractor in detail and to see how efficiently the plant or contractor is performing with a new program. Cost is only one element here.

We have seen on the average a 15-percent savings when a should-cost analysis is done. It costs the government a good deal of money to perform a should-cost" analysis, sound selection is a must. We should continue to perform the "should-cost" analyses, but as the full impact of our improvement programs are fully felt, along with the impact of the Packard Commission recommendations, more and more of these internal reviews can be turned over to the program manager so he can decide what is needed.

I would look forward in the future to allowing more freedom for the program manager. I think we have gone too far in the other direction.

Mr. **Chappell**. What is your policy with reference to program managers? Are you trying to leave them in place for the duration of the product they are trying to develop or going through a process of rotation on a routine basis?

Dr. **Wade**. We are moving toward keeping them in place for a longer period of time, at least through major milestones.

My personal judgment is that we ought to be moving towards selecting the program managers on the basis of who is the most qualified, experienced and ready to go into the new position, whether or not he is a civilian or military. If we are going to have high-tech quality programs, we have to have the highest, most proficient managers running them. That is what our objective should be.

Mr. **Chappell**. I agree.

Mr. McDade?

CONCURRENCY IN WEAPONS DEVELOPMENT

Mr. **McDade**. Thank you, Mr. Chairman.

Thank you, Mr. Chairman. I want to talk about concurrency and weapons acquisition. Often, it seems when there is excessive concurrency it leads to technical problems and cost overruns, one of the major examples being the DIVAD, which was ultimately cancelled.

The Packard Commission has rather strongly condemned concurrency and recommended in lieu thereof a larger use of prototypes in the development cycle.

As part of its implementation of Packard Commission recommendations, are you going to include efforts to reduce concurrency and increase the use of prototypes?

Dr. **Wade**. Yes, sir, as a general rule. But I would also observe that concurrency saves time if it is done right and time saves money, so I don't want to in general terms, denigrate the use of concurrency. Each program is different and we have to develop our own acquisition strategy to fit each program.

I think that the recommendation coming out of the Packard Commission as to the use of prototypes before we actually move into full-scale development is a good policy, but I wish to stress each program has to have its own acquisition strategy, its own tailoring.

For example, with the ATF program, our new fighter aircraft, do you want to develop two prototype airplanes and fully test both before you move into full-scale development? My bottom line would be that we are going to move more away from concurrency, again where it makes sense to do so. Prototyping will be given increased attention, but again each program should be tailored in the context of its own need.

Mr. **McDade**. The risk factor will be a key determinant?

Dr. **Wade**. That is correct.

Mr. **McDade**. Take a system like the C–17, which is a major initiative underway and one which both the committee and the Pentagon have a deep interest in. How would you classify that kind of program?

Dr. **Wade**. That particular program, I think, has a lot of related commercial research and development behind it already. Many of the subsystem technologies are reasonably well developed. To build two different prototypes for the C–17 in my judgment wouldn't make much sense. I think the risk here is relatively low.

Mr. **McDade**. Could you give us an example. A program where you believe that there is sufficient risk to warrant no concurrency whatsoever.

Dr. **Wade**. In some of the small cruise missiles, for example, that really have high tech in them, you are trying to drive the ability to switch sensors with minimal change to the program. There I think the flight test program is imperative because you are trying to drive down the cost, but even two prototypes would make good sense.

PROCUREMENT REFORM

Mr. **McDade**. Last year there was action taken in Congress to try to enact some kind of procurement reform legislation. Have you had an opportunity to look at the impact of that legislation?

Dr. **Wade**. Which ones specifically are you talking about, Mr. McDade?

Mr. **McDade**. There was a package in our appropriations bill and there was also an effort in the Armed Services Committee dealing with should cost, allowable costs, a whole array of topics. Have you had an opportunity to assess the impact yet?

Dr. **Wade**. There have been so many bills that we have been working; for example, this work measurement matter which has been in front of Congressman Mavroules' committee lately.

Mr. **Dicks**. Did you say work measurement?

Dr. **Wade**. This is an area, work measurement, that has been under review by the DOD for some years. Military Standard 1567A is the specific description. The Air Force, for example, has been using work measurement for years in the measurement of their programs. The Navy basically takes a different approach, and looks towards use of defects, controlling quality of manufacture through defect measurement and work-force motivation.

My judgment is work measurement as used in the main by industry makes good sense, but again it ought to be tailored selectively on a program by program basis.

Mr. **McDade**. In the continuing resolution, for example, we had appended to the appropriations bill some language addressing the issue of allowable costs. Can you give us some illustration of how that is working? Can you tell us if it was a productive step? Have you assessed it yet?

Dr. **Wade**. Right now I don't see any problem with Section 911 and what we are doing. Allowable cost is an acquisition matter that is under review, and always a subject of high interest. It is working rather well right now, but more data from the field is needed for a good bottom line.

Mr. **McDade**. If you need to expand your answer, we encourage you to do so because it is the law. It was expanded in the appropriations bill as sometimes happens around here. It really belonged on the Armed Services bill. We need to get some idea of whether you think it is working or not.

[The information follows:]

The Department of Defense (DoD) has taken action to implement Section 911 of Public Law 99-145, "Department of Defense Authorization Act, 1986." Section 911 specified that certain costs detailed in this section are not allowable under covered contracts. Further, the DoD was directed to clarify in the DoD Supplement to the

Federal Acquisition Regulation certain cost principles dealing with allowability of contractor cost.

The DoD has not been able to assess the potential benefits of the penalty provision of Section 911 in that, contractors coming under the section have only recently begun to submit indirect cost proposals for settlement.

EXCESSIVE USE OF UNPRICED CONTRACTS

Mr. **McDADE.** Mr. Secretary, the committee understands that the Defense Department had approximately $28 billion of unpriced contracts on September 30, 1985, an increase of $5 billion from the previous year. Under such contracts, DOD orders items without worrying about their price. However, when it comes time to negotiate with the contractors on price, DOD has lost most of its leverage.

What is the reason? What is the justification, Dr. Wade, for so many unpriced contracts being issued?

Dr. **WADE.** There were several reasons. One is that the changes in procurement regulations; for example, more competition, the time spent to make sure the public is aware of the solicitation, the subsequent review, and the audit procedures have added time. I think in part we expected that when we implemented the new processes but we think that when they are institutionalized some of the time will decrease. There is occasional urgency for a piece part.

We uncovered this $27.9 billion last October. We had a review of the matter by the Defense Council on Integrity and Management Improvement, issued instructions to the Military Departments to reduce these amounts by 32 percent within the coming 12 months by the Navy, Air Force, Marine Corps, and DLA. The Army, which, had done the best job over the previous 12 months, was to reduce their current figure by 10 percent. Since that order went out, the $27.9 billion has been reduced on the order of $3 billion and we look for close to a 50 percent reduction next year.

Mr. **McDADE.** It appears that the Army has decreased its use of unpriced contracts, but the Navy and Air Force have increased them. What is going on there?

Dr. **WADE.** Army attention to that matter early on resulted in better control. The Navy and the Air Force didn't give it the same management attention. You are correct, the numbers rose substantially in the Navy and Air Force and that is why they were given a 32-percent goal to meet while the Army was given 10 percent.

The Navy, now, is doing well in this area; overall, the Department is on the way towards getting the matter more firmly under control.

Mr. **McDADE.** Can you tell us what regulations the DOD had in place on this issue before the GAO disclosed the extensive use of unpriced contracts? What were your regulations——

Dr. **WADE.** I can provide that for the record.

[The information follows:]

Federal Acquisition Regulation 16.603 is the regulation that covers contractual instruments that authorize the contractor to begin immediately manufacturing supplies or performing services. The instruments may be used when the Government's interests demand that the contractor be given a binding commitment so that work can start immediately and negotiating a definitive contract is not possible in sufficient time to meet the requirement.

Dr. **Wade**. I would like to note that it was the DOD that had a major part in uncovering this problem. The GAO helped, but our internal management procedures were the operative element here.

Mr. **McDade**. Tell me more about that because the impression is that most of it came from GAO, some from the IG.

Dr. **Wade**. Our management system has been auditing spare parts and unpriced orders since 1983. In the case of the Army, I think it was primarily Under Secretary Ambrose, wherein he required the top leadership of the Army to sign off on any major unpriced order.

In the Air Force, more control was in the hands of the field commanders, and we got in trouble.

Mr. **McDade**. Are the other services going——

Dr. **Wade**. They are placing high-level attention to it. I talked with Mr. Pyatt about his personal attention to this matter.

Mr. **McDade**. Do you know why the Air Force in particular was using unpriced contracts for spare parts? They seem to stand out more than anybody.

Dr. **Wade**. I believe it was in the context of trying to meet the requirement, to get money out and working. It was something we were very concerned about. As you know, you find often that such a program is 80 percent committed before you sit down and negotiate what the bottom line is. In that context, your leverage there is very low indeed.

Mr. **McDade**. What is the magic to the 32 percent order that you put out?

Dr. **Wade**. It was a factor of about one third.

Mr. **McDade**. Thank you, Mr. Chairman.

Thank you, Mr. Secretary.

Mr. **Chappell**. Mr. Dicks?

GRAMM-RUDMAN-HOLLINGS IMPACT

Mr. **Dicks**. Dr. Wade, I want to compliment you on your statement. I think it is a very good document for this committee.

Your discussion of the success of multiyear procurement is most impressive. You note that in the 40 programs approved to date by Congress, you expect savings of $6.2 billion. What would be the impact on this expected savings if Gramm-Rudman-Hollings sequestration took effect and multiyear contracts were not protected?

Dr. **Wade**. The impact would be dramatic.

Mr. **Dicks**. Could you give us a little more on that?

Dr. **Wade**. It might mean breaking the contract. Looking towards the outyears, you could get a loss as far as liabilities are concerned; and secondly, you destroy the impact of multiyear planning, which is good long-range investment planning.

Mr. **Dicks**. The same would be true with firm fixed-price contracts that have been entered into?

Dr. **Wade**. Absolutely.

Mr. **Dicks**. On the first go-round on sequestration, we were able to exempt personnel and gave the authority to the Administration to exempt certain contracts that were in place. Would it be your recommendation that some—as Congress attempts to develop an alternative budget, would it be your recommendation that that same kind of exemption be worked out at this time between the Administration and the Congress?

Dr. WADE. First of all, I hope we will not see the initiation of Gramm-Rudman. The program that the Administration presented, if fully implemented, will lead not to the need of having this type of procedure put in effect. As to what the specifics are to minimize the potential impact if that were to occur, there would be a set of actions that we would have to go back and address.

Mr. DICKS. The Congress has to develop an alternative. If we have to get down to a $144, billion deficit there are going to be some reductions made, So the question is, how do we craft an alternative that prevents the onerous provisions of Gramm-Rudman from happening? It seems to me that this area of multiyear contracts and firm fixed-price contracts is one area the Congress ought to exempt again in developing an alternative budget.

Dr. WADE. It certainly would help. My overall concern would be that many programs will be stretched out, and cut back, the net result could well be that we will be expending more money than we should and by significant amounts. It is going to cost a tremendous amount of money. If such a process is actually initiated.

Mr. DICKS. All the things we have talked about as being flawed procedures for procurement, the instability in the procurement process for instance would be enhanced by stretching out programs which would almost be inevitable if Gramm-Rudman were allowed to go into effect.

Dr. WADE. There is that potential and we have to make sure that doesn't happen.

Mr. DICKS. Isn't it true though that if we do protect multiyear contracts and save firm fixed-price contracts that other areas are going to have to be hit harder?

Dr. WADE. Yes, sir.

STRATEGIC SYSTEMS

Mr. DICKS. Your statement notes that the addition of air-launched cruise missiles on 100 B-52s and other improvements have raised the strategic bomber capability to destroy hard targets by 90 percent since 1980. You also state that our ICBM capability against hard targets has risen 80 percent over the same period.

What additional increases in this period are expected to take place in fiscal year 1987?

Dr. WADE. There will be continuation in production and deployment of cruise missiles. There will be continued improvement in the quality of our land-based ICBM force, and associated with the ICBM element, major advances in our SLBM and strategic bomber weapons.

In addition, we will see continuing improvement in our command and control systems which have a bearing on overall deterrence—— as they impact on all our weapon programs

INDUSTRY KICKBACKS.

Mr. DICKS. Earlier this week on a national television show, and I don't know if you have seen the outtakes of this in printed documents—I haven't, but I am asking for them—there was a very serious allegation made that purchasing agents for prime contractors are involved—and they characterize this as almost an industry-wide practice of paybacks from subcontractors to purchasing agents of major defense contractors.

Is that something you are aware of or is your Department looking into this?

Dr. WADE. Yes, sir. I saw that tape last night. I could have it sent to you.

Mr. DICKS. I would like to see it.

[The information follows:]

My letter of May 7, 1986, addressed to Mr. Dicks provided a copy of the tape of the newscast regarding subcontractor kickbacks. For the record, I am enclosing a copy of the pertinent transcript.

Gorbachev Criticizes U. S.

RATHER: At a Communist Party Congress in East Germany today, Soviet leader Gorbachev was playing both sides of the public relations coin.

In one part of his speech, he accused the U. S. of resorting to, quote, "jungle laws" in odering air strikes against Libya and pushing people to the nuclear brink.

In the same speech, Gorbachev proposed what he called significant cuts in all types of conventional arms and troops in Europe. That's a quote.

U. S.-Soviet talks aimed at doing that have been stalemated for years.

The White House response to Gorbachev: both his attack and his offer amount to posturing.

Satellite Explodes

RATHER: The prime unmanned back-up now used for putting big U. S. military payloads into space since the Challenger disaster today exploded on take-off.

It was the second straight failure in eight months of a launch of an unmanned Titan 34-D rocket from Vandenberg Air Force Base in California. And CBS News was told tonight that, in effect, the United States now has no system for putting big, sophisticated military reconnaissance satellites into orbit. And CBS News was also tonight that the Air Force believes this Titan may have failed because of an O-ring joint problem.

The Titan has a joint system similar to, but not identical to the shuttle joint system.

The Titan that failed today was believed to be carrying a spy-in-the-sky satellite. The accident damaged the launch area. No reported injuries.

Defense Contractors

RATHER: A lot of the taxes you pay, $167 billion this year, is for defense spending, everything from nuts and bolts to bombs and missiles. The Defense Department supposedly picks the best quality, lowest bidder for each contract. The company picked, using huge staffs of buyers, in turn hires out some of that work to other companies, subcontractors.

Now is that money well spent? Who gets these big money, much sought-after subcontracts, and how do they get them?

The official answer you get from defense industry businessmen is it's the subcontractor offering the best quality at the lowest price. But off the record, many say it's the subcontractor who makes a kickback to the prime contractor buyer. No bribe; no business.

This man is the president of a subcontracting company. To further protect his identity, we used another voice for his exact words.

Sir, the aerospace industry says that kickbacks are a thing of the past. Are they?

UNIDENTIFIED MAN: No. They are very much part of every-day transaction for doing business.

RATHER: How widespread? How prevalent is this practice?

UNIDENTIFIED MAN: It affects every prime contractor. And I say that without fear of contradiction.

RATHER: In the past 2 1/2 years, 19 buyers and executives from big firms, such as Hughes Aircraft, Northrop and Teledyne, were convicted of taking cash kickbacks. But prison terms for them apparently haven't changed industry practices.

ROBERT BONNER [U.S. Attorney]: What we're talking about here is something that has come very close to being a way of life. We are talking about prevailing rates for the kickbacks, what's done and how it's done. There's even, I'm sad to say, a going rate that we've seen, based upon the prosecutions that we've brought here in southern California, and the going rate is about five to ten percent of the amount of the subcontract [that] is kicked back to buyers.

RATHER: This is a recent meeting called by some major prime contractors. Attorney General Bonner estimates that 50% of their buyers are on the take.

Prime contractors deny it's a big problem.

The ten largest defense contractors employ 6,000 buyers. Last year the Defense Department was involved in 15 million different purchases. This former Ratheon buyer worked in the Northeast. He says he took in a quarter million dollars through his bogus consulting firm.

UNIDENTIFIED MAN: Companies do not want really the consulting fee. What they really want are favors and certain priorities in some of the government contracts that I was working on.

RATHER: He got caught. Most crooked buyers apparently do not.

TOM CARVEY: It is very tough to detect, even tougher to prove. You don't find it by audits, paper chases. People can rationalize. They just fix the paper up so that it doesn't show.

RATHER: When a crooked buyer is found out doing business with one company and he's dropped by that company, does he then go to work for another company, or is he through forever?

UNIDENTIFIED MAN: No, there is a revolving door. If he's kicked out, it's Hughes today and Douglas tomorrow, or Lockheed the day after.

RATHER: Senator Carl Levin has a bill he says will discourage kickbacks.

SENATOR CARL LEVIN: I think we have a national scandal here.

RATHER: And how much does that wind up costing the taxpayer?

SENATOR LEVIN: It's hard to estimate. But I would say, at a minimum, tens of millions of dollars, and more likely hundreds of millions of dollars right out of the taxpayers' pockets.

RATHER: Nobody we met could show that the quality of weapons is being compromised. It's just a matter of money.

Does anybody ever talk about the country?

UNIDENTIFIED MAN: Not at all. They care little about the company they work for and, in many cases, may not even know the programs they're working on. And certainly the furthest thing from their mind is patriotism or any sense of responsibility or loyalty.

RATHER: But we're dealing with national defense. We're dealing with our national security.

UNIDENTIFIED MAN: You would have a tough time convincing them of that.

RATHER: This year what the Pentagon purchases will cost more than what General Motors, Exxon and IBM purchase combined.

Dr. **Wade.** It is a serious problem. We have had our IG involved. I would hate to say that it is industrywide.

Mr. **Dicks.** There were people on the show as I recall saying that this was a common practice.

Dr. **Wade.** That was one individual who was caught and often when you see a person in that position, he will try to share, even enlarge the blame. I don't believe that the depicted relationship between our industry and DOD is anywhere as perverse as that individual said; but at the same time, it is a serious problem and one that we are addressing.

The IG has many audits underway looking towards uncovering such problems. I think it is a small percentage of our overall acquisition program, but even if it is small, it requires our attention and we are giving it priority.

Mr. **Dicks.** I hope that you will keep this committee advised on what you find in this area. Obviously one of the reasons Congress pushed so hard for an independent IG was because of these concerns.

Packard Commission

You mentioned procurement reform. Just generally what is your impression of Packard Commission recommendations?

Dr. **Wade.** My personal judgment is that it is a significant, important and positive first step. Now the task in front of all of us, both the Congress and the DOD, is to implement the recommendations. Recommendations sometimes come quite easy. The problem is of backing them up and putting them into effect. That is where the bureaucracy gives you trouble. Some important parts of the Commission report. One is the recognition that there are too many constraints on the program manager. We need to make him accountable; to do so, we must give him the tools to do his job. Another is the need for more centralized authority from the Office of Secretary of Defense and how that impacts with the services.

A very important recommendation, which in my judgment could be the most significant over the longer term, is the recognition that we need to improve the overall quality of our acquisition work force, both military and civilian. We have been successful over the last five years in improving the infrastructure the pay and living conditions of these in our combat forces. But if we don't reach and achieve a similar success story for our acquisition people, both civilian and military, we are not going to have the high tech capability that is required in our military forces.

We have a high tech industry. We need to have the same quality operation within the DOD professional workforce itself. If we can't manage that, we will have to depend too much on industry to do both our job and their job, and that has spelt and will spells trouble.

Mr. **Dicks.** Were are the deficiencies—what are the major problem areas?

Dr. **Wade.** First of all, the front-end requirements process needs to be fixed. In the context of just acquisition, our streamlining initiative is well underway. A second part is the overall makeup of our acquisition people force. We have already recognized that and have steps underway to further improve that problem. We need also to look at how we manage or organize our DoD program overall. In this respect, if you improve the people force, they also will drive the make-up of the organization, rather than the other way around.

Next, I would point out that we spend about $150 billion yearly in the procurement of equipment and associated supplies. We as a Department can take the lead, and we in part are doing that, in the sense of modernizing our manufacturing technologies—a lead in improving upon the quality of the manufacturing base extant in the United States.

Finally, the matter of the relationship between industry and the DOD. It is a partnership that has split apart over the last five years, and for a variety of reasons. Fault here lies on both sides. We need to fix this.

This subject formed a key recommendation of the Packard Commission, which was also in my white paper. The recognition of the importance of the relationship, to get it together, to make it mutually beneficial to both sides.

WARRANTIES

Mr. **DICKS**. In your statement you said it was too early to make a judgment about warranties. Have you seen any noticeable negative impact by the congressionally mandated warranty requirements?

Dr. **WADE**. No. Not all! One question has been how do you go about doing a cost effective analysis, to prove how beneficial to the government a warranty for a new program will be. My judgment today is that we will find it to be positive over time. Again, I would offer the observation that if we improve the overall process of how we manage our programs people wise, and the program managers, that they ought to be able do that on his their own, without having this kind of direction coming from Congress.

Mr. **DICKS**. Secretary Lehman said he felt it was positive, that this would strengthen the Navy's hand.

Dr. **WADE**. Looking back, I think the Department made too much of an issue against it.

CONTRACTING OUT

Mr. **DICKS**. One thing troublesome is the question of contracting out. I come from a district that has large defense bases and there has been concern that many times you contract out a responsibility, security, fire, whatever it may be, and initially you get a pretty good price for that, but over a period of time the cost goes up. You remove that from the government's responsibility, you don't have government workers doing the task and the next time around the price goes up.

Have we done anything about developing post-contract audits that look at whether we are getting the savings that are initially programmed?

Dr. **WADE**. Yes, sir. The fact that you can again compete the contract once the initial period has expired. In one sense by having competition of this kind makes the government employees think how to be more efficient because they have to understand how they can put together their own case to win the competition. The contractor has to win by something like 10% over and above what is required or proposed by the government. When the contract expires, and you compete it once again, it may revert back the other way. The A-76 process is improving as time goes on, and we continue to assess how to make it better.

Mr. DICKS. The A-76 review?

Dr. WADE. Yes.

Mr. DICKS. As I recall last year, the committee directed the Department to provide information on the actual cost of contracts let under A-76 procedures compared to initial bids. That information has not yet been provided. When can it be expected?

Dr. WADE. I believe it was sent over here about a week ago.

Mr. DICKS. We may not have seen it yet, but we appreciate that.

Thank you, Mr. Chairman.

SPARE PARTS FUNDING LEVELS

Mr. CHAPPELL. Mr. Wade, in his statement to the committee on Monday, JCS Chairman Crowe states, "The fiscal year 1987 budget still puts considerable emphasis on sustainability and rightfully so . . . We must stay the course if we want a genuinely sustainable force as well as a modern and well trained one. Otherwise, we will be spending a great deal for modern equipment with one hand and then reducing its effectiveness with another."

In last year's budget to Congress, the Defense Department forecast needed $13 billion in spare parts funding in fiscal year 1987. The current budget requests only $8.6 billion in fiscal year 1987, and is in fact lower than the fiscal year 1986 spares funding appropriated by Congress, before Gramm-Rudman-Hollings.

Dr. Wade, what has caused the approximate one-third reduction in the Department's spare parts funding?

Dr. WADE. The answer is the dramatic cuts the DOD has felt over the last several years, and particularly as we look to future years from cuts placed on programs. The 1986 number as I recall was like $8.7 billion. The request this year is within $100 million of that. Your numbers are correct. As I recall, the Air Force line item was cut $400 million.

This needs to be put into perspective. In 1980 the figures were a factor of four times below that current number; and we have been filling the bins since then.

Overall readiness has improved. We can offer on the positive side the fruition of many of the improvements from our acquisition programs. As such, this will entail less need as we look towards more reliable and durable systems where replacement piece parts are not required to the same extent they would have been five years ago. Inflation is down so we get more for our money. Maintainability factors are better and will lead toward efficiencies in this regard. But I don't want to leave the impression that we have not felt this cut because we have. $8 billion is just keeping the level that we were at last year. We have to take cuts somewhere; we have to balance as smartly as we can the cuts across readiness, sustainability, modernization and force structure.

Mr. **Chappell**. You are saying that much of this is from contract savings because you are doing a better job?

Dr. **Wade**. In part. The other has been on the down-side from our earlier defense level recommendations.

AIR FORCE SPARES FUNDING

Mr. **Chappell**. The current Air Force five-year plan from 1987 to 1991 is to buy 1,590 new fighter aircraft, an increase of 258 aircraft from last year's plan. Yet, the Air Force fiscal year 1987 budget submission for aircraft spare parts is down $2.6 billion from the fiscal year 1987 estimate in last year's budget. Worse, the Air Force claims the aircraft replenishment spares funding only supports 56 percent of the requirement.

Why has the Department reverted to its budget practices of the mid-seventies where logistics funding was sacrificed for new hardware?

Dr. **Wade**. The numbers indeed have been cut back from last year. One aspect is that as we adjust to the top line cuts in our budget, and project these new figures out in the future, further adjustments need to be made. We must try to keep efficiency in our existing hardware programs and meet the need for spares. I expect that we will be adding more money in the outyears to our spares as our planning finalizes for the out year programs. Overall, the readiness and sustainability accounts have risen dramatically over the past 5 years. But we also have had to cut back in the context of what moneys are available for both ongoing production programs and needed replenishments.

Mr. **Chappell**. But do you agree that the Air Force, given the climate of today, including Gramm-Rudman-Hollings and the fact that you have locked in most of these aircraft by multiyear contracting, that it is going to cause a serious shortfall with the Air Force?

Dr. **Wade**. That potential is there and we have to be careful to make sure it doesn't happen. There is no sense in buying new airplanes if we don't have the equipment that goes with them. That should be a first priority.

Mr. **Chappell**. The Air Force Systems Command Commander, General Scantze, was recently quoted, "Rather than field 40 or 44 wings that aren't fully equipped to do combat missions, we would field 38 that are fully equipped. The leadership philosophically is committed."

Dr. Wade, in your opinion, does the Air Force fiscal year 1987 spares budget reflect that commitment?

Dr. **Wade**. The 1987 program reflects the commitment towards making sure the equipment we have is ready, capable of fighting, and having the needed sustainability behind it. We have had to pull back some from earlier projections. In some areas it is a significant pullback, but as we look to what we have done over the past four years, we can be proud of a major success story. Our program is balanced in the sense of not only the force structure that we are buying, but the back-up sustainability that goes with it.

AUTOMATED LOGISTICS SYSTEMS

Mr. **CHAPPELL**. The Defense Department has initiated automated information system acquisitions for many of its logistics activities. Current automated logistics programs are estimated to have life cycle costs exceeding $6.5 billion. They will be the Department's backbone systems well into the next century.

Dr. Wade, as the Department's senior logistics official, have you reviewed and approved the ADP logistics modernization plans of the Army, Navy, Air Force, and Defense Logistics Agency?

Dr. **WADE**. If you mean by your question, Mr. Chairman, have I reviewed personally all these plans and programs, the answer is no. I probably would be here for many years because there are that many programs. This is a very complex area in which there are many modernization programs already underway in both the military departments and the defense agencies. We have a process that we use to address the major programs. We allow the services to handle on their own the smaller programs. I am not personally happy with where we stand in this area. Now that we have in some respects most of the major review behind us on acquisition, it is an area that I am going to give a lot of attention to in the coming months.

ADP PLANNING

Mr. **CHAPPELL**. Do you have a departmental logistics modernization plan?

Dr. **WADE**. We don't have one plan. I am not sure at this time we can have one plan that makes sense. As many parts as there are, and how often they change, we would be interacting continually with Congress explaining ourselves.

Mr. **CHAPPELL**. What systems planning and review process have you established for ADP logistics modernization programs to ensure interoperability and standardization, eliminate duplication, and accomplish integrated logistics systems planning?

Dr. **WADE**. We have the MAISARC process which reviews the larger computer systems that address/provide for information management. I don't think that we have a central plan to make sure that interoperability exists throughout the DOD. There are plans within each service, and we try to oversee them at our level. As I said earlier, I think we need to do better and I intend to provide a high priority in this area over the next six months.

Mr. **CHAPPELL**. I guess you are saying you have got one whale of a job as the senior logistics official?

Dr. **WADE**. Yes, sir, and this area is particularly difficult because technology is moving very, fast. Each service need comes up at a different time. They can't be slowed down until they are programed across the board. We do want to instill competition in each system, so it is complex and difficult and it requires our full attention.

FUNCTIONAL STANDARDS

Mr. **CHAPPELL**. What do you do with reference to setting standards?

Dr. **Wade**. We have an office that has the responsibility to oversee standardization in these systems.

PACKARD COMMISSION

Mr. **Chappell**. Let me go to the Packard study for a moment where the problems with reference to user pull and technology push come into play. They make the point that neither of those systems in and of itself is very adequate, indicating that sometimes we get too much pull from our user influence or too much push sometimes from the other side, and you end up with not enough flexibility to take into account costing factors, and almost from the beginning of the program, and you lose the opportunity for flexibility.

What is your judgment on that point?

Dr. **Wade**. I agree with that, Mr. Chairman. I think that when you talk about technology push, that weapon systems like nuclear weapons and radars all came from a technology push approach. What we need to do is to improve what I would call the front end process, namely that if a user comes in and identifys a need, there first should be a review as to whether there is a need. We should not come in at that one time with both a need and a solution.

If we agree there is a need, the next step is to look towards the solution. We ought also to look towards more than one solution in the context of how best to go about approaching the problem. It is also helpful in that context that once we determine the fact that there is a need in a certain mission area, there should be an input as to what types of funds are available to address the problem. You provide by this some boundary in the sense of where priorities are vis-a-vis other needs and priorities of the DOD.

What we have seen up to now, although it has improved in the last several years, are junior people working the so-called milestone zero step, and the four-star level coming in at milestone 3—when we weigh production. We ought to put more attention upfront in reviewing the need. Once the need is approved, we make certain that it goes through with sufficient resources.

CONTRACT PLANT OVERSIGHT

Mr. **Chappell**. You come to a point having to do with contract plant oversight. Each of the services and the Defense Logistics Agency have personnel assigned to contractor plants to monitor contractor operations and performance. Secretary Lehman testified to the committee that the approximately 16,000 government employees performing this function significantly contributes to high overhead costs on defense contracts.

Secretary Lehman does not believe these positions should be eliminated, but he thinks they can be substantially reduced. Would you agree with that?

Dr. **Wade**. I agree that we have reached the point as the acquisition process has improved that we could cut back on the number of auditors. But I would also observe that the record up to now has demonstrated sizable savings have been achieved here. It gets back to my point that there has been fault on both sides of the equation.

We are getting better in how we manage these programs, and as we get better, we can make an auditor drawdown.

Mr. CHAPPELL. Can you give us an example of that?

Dr. WADE. Using the number 16,000, cutting it back between a quarter and a half when we look towards the next four or five years as a reasonable goal. If we have a plan in which the Army, Navy and Air Force are involved, we can perhaps look towards making certain that one office handles a single plant, rather than having more than one set of auditors involved at each plant.

Mr. CHAPPELL. How many can we take out by reductions in 1987?

Dr. WADE. I wouldn't want to guess on that, Mr. Chairman. I could look at it and give an estimate.

[The information follows:]

We are in the process of reorganization of the acquisition functions. At this time, I would not recommend any reduction in the contract administration staffs.

Mr. CHAPPELL. Can you cite a specific example where we have saved substantial moneys in the auditing process?

Dr. WADE. I can provide that for the record. I don't have the numbers here.

Mr. CHAPPELL. Please do.

[The information follows:]

DCAA reported the following savings for the six-month period ending September 30, 1985:

Incurred costs	$124,000,000
Forward Pricing Proposals	1,426,000,000
Cost Accounting Standards	90,000,000
Defective Pricing	28,000,000
Total	1,668,000,000

Mr. CHAPPELL. Let me ask the question this way. What are you going to do to make certain that while you have the right number of people monitoring, how are you going to effectively reduce those numbers while still maintaining the monitoring which you feel is sufficient to give us savings and quality?

Dr. WADE. The I recently has taken a look at this and one of the results of his review is that we have a certain amount of redundancy in the auditors coming into the plants. We can improve, making sure redundancy is minimized, and the number of plant visits are required. I don't think the savings will be all that high, but there are some we can look forward to.

Mr. CHAPPELL. Doesn't the DCAS have half of these plant representatives?

Mr. WADE. Yes, sir. DCAS has approximately one half of tthe plant representatives.

Dr. CHAPPELL. Are you giving any consideration to total consolidation?

Dr. WADE. Do you mean as far as the services and DCAS—

Mr. CHAPPELL. Yes.

Dr. WADE. I am sure that will be looked at, but I don't see a new need for doing that, There are service-unique requirements that require service management and there are places were DCAS makes sense.

I don't have a personal view at this time. If you want me to give you a personal read-out I can for the record.

[The information follows:]

There is no evidence that consolidation would enable us to reduce the number of employees without adversely impacting the way we perform contract administration. DoD favors the present concept of maintaining responsibility, accountability, and direct involvement by the Military Departments.

Contracts for engineering and design, research and development, and major construction are highly technical, difficult to administer, and often involve complex changes. Reaction to change conditions and unforseen problems must be rapid and informed. Administration of these contracts by a large, centralized, and remote organization would deprive DoD components of the necessary flexibility and expertise to acquire quality products and services in a timely manner.

DCAS performs the contract administration functions for all of the Military Services and DLA at thousands of contractor locations where the volume of work does not require the assignment of full-time Government representatives. This is accomplished through a system of regional and district offices. DCAS is also responsible for a number of offices located in contractor plants where none of the Military Services has a predominant part of the Government business volume. Each of the Military Services also maintain contract administrative offices at specific locations where the Service has the predominant part of the Government business. In my opinion, this distribution of contract administrative responsibilities is appropriate.

Mr. **Chappell**. How much do these 16,000 employees cost annually?

Dr. **Wade**. I don't have the figure here. I can provide it, Mr. Chairman.

[The information follows:]

There are around 13,000 employees in the contract management and quality assurance areas within the Defense Contract Administration Services (DCAS) organization. These employees account for almost 14,100 work years at an approximate annual cost of $460 million.

Mr. **Chappell**. What savings are possible from such an action?

[The information follows:]

The Military Services maintain contract administration responsibilities only at those large contactor locations where a single Department has the predominant share of the business volume. We do not believe consolidating these locations under DCAS would be cost-effective.

Mr. **Chappell**. Do you have any studies ongoing with reference to consolidation?

Dr. **Wade**. Yes, sir. In follow up to the Packard Commission there are studies underway.

Mr. **Chappell**. Mr. McDade.

Navy Acquisition Policy

Mr. **McDade**. Thank you, Mr. Chairman.

Mr. Secretary, as you know, Secretary Lehman recently approved a significant change in the Navy's acquisition policy which requires industry to provide all production tooling and test equipment, and which increases competition and uses cost ceilings on major contracts.

Have you had a chance to review that policy and do you agree with it?

Dr. **Wade**. Yes, sir, I have reviewed it. My answer would have to be yes and no with a definite leaning toward the "no". Every program requires its own tailored acquisition strategy; and in the context of sharing the needed upfront money with industry where it can be constructive to the program as a whole, it makes good sense. The part I would be concerned about is in those programs where you have a high R&D risk, upfront in full-scale engineering development. It is important to be very careful. For example firm fixed-price contracts in areas entailing technical and cost risk is an area that over the longer term is not going to benefit the DOD.

A similar comment was made in that regard by the Packard Commission. As far as upfront tooling, the same comment would apply and each program should be looked at individually.

Mr. McDade. Could you give an example of where you would agree with the policy as far as tooling is concerned and where you would disagree?

Dr. Wade. I would have to go back and review the facts.

Mr. McDade. We would like you to provide the committee staff and for the record some illustrations of how the policy works.

[The information follows:]

Navy's policy on tooling and test equipment is stated in part as follows: "Once production has been approved at Milestone III, contractors are expected to provide all production tooling and test equipment, as well as those facilities required for program execution." It has been the Department's position that contractors are expected to provide general purpose tooling and test equipment. Contractors normally recover the cost of general purpose equipment through an indirect cost allocation. The cost of special tooling and test equipment, that which is of such specialized nature as to be usable on only one contract or end item, is normally charged as a direct cost to a contract. Navy's policy change therefore is a change only in the treatment of special tooling and test equipment.

Contractors can be expected to be willing to risk capital expenditures for general purpose equipment in anticipation of a contract because the equipment can be put to other uses. For special purpose tooling and test equipment, contractors can be expected to be reluctant to assume the risk of a capital expenditure without providing for the contingency that the quantity or rate of production will not reach the planned levels.

In one of the early applications of the Navy policy, Navy has assumed the risk early on by agreeing to acquire that special tooling and test equipment which is necessary to produce test articles and limited production articles. Contractors have agreed to acquire special tooling and test equipment at their own risk after approval for full rate production. This agreement takes into consideration the circumstances of the particular program and appears to be a reasonable allocation of risks between the parties to the contract.

Mr. McDade. Do you know if any of the other services are going to implement programs similar to the Navy?

Dr. Wade. I would guess as a general policy, no. I haven't seen any signs to date in this regard toward support.

Mr. McDade. You don't think we should have a uniform policy?

Dr. Wade. We are working towards that. Yes, I do.

Mr. McDade. When do you think you will get to that?

Dr. Wade. This is one of the issues that the Packard Commission has been addressing. There you see a recognition towards the need for further acquisition centralization at the OSD level, and that is centralization and uniforn policy formulation need that we ought to get on with.

WARRANTIES

Mr. McDade. Your statement indicates that the DOD's implementation of statutory direction for warranties is well underway.

In December 1985, Air Force auditors evaluated the Air Force's administration of product performance agreements, (PPA's) which, as you know, include a diversity of guarantees, warranties, and incentives designed to motivate quality manufacturer performance.

Air Force auditors reported that:

> Opportunities existed for contracting officers to improve the administration and enforcement of product performance agreement provisions.
>
> The Air Force did not receive full PPA benefits for the six systems reviewed because one or more of the principal provisions were not adequately administered or enforced.
>
> Four of five Air Force plant representative offices visited were not performing comprehensive reviews of contractor procedures for processing warranted items because it was not required.
>
> We identified instances where (1) defective items with PPA coverage were repaired at government expense; (2) PPA provisions and clauses were not always clear; and (3) policies and procedures for PPA enforcement required strengthening.
>
> Conditions we found for the six systems reviewed would apply to all Air Force programs that have PPA's.

Dr. Wade, in spite of your policy guidance and memos to the services, do you think that the Department's policies on warranties are really working?

Dr. WADE. As of now they are. As I have indicated, let me note that the new warranty policy has been placed in effect on our new programs and the impact of the results of this will not be seen until we are downstream several years.

Mr. MCDADE. Do you have a ballpark estimate of the numbers of new contracts that have warranties?

Dr. WADE. All of the new programs have warranties.

Mr. MCDADE. You mentioned that some you can't, you are already locked in.

Dr. WADE. There are varying types of warranties. The new programs have the warranties as provided by law, performance and specification provisions.

Mr. MCDADE. All the new contracts contain those?

Dr. WADE. Yes.

Mr. MCDADE. Do you know what has been done by the Air Force to improve its performance in light of the audit reports?

Dr. WADE. I haven't seen that report.

Mr. MCDADE. Please give us a critique for the record.

[The information follows:]

The particular Air Force audit report in question entitled "Administration and Enforcement of Product Performance Agreements", dated December 26, 1985 reviewed contracts which preceded the 1985 Warranty Law. In fact all eight contracts reviewed by the audit activity were awarded in 1979 through 1982 and therefore may not be representative of contracts signed since the 1985 warranty law. The report references Product Performance Agreements which notably include growth or improvement related agreements such as for increased reliability, maintainability or availability staged over a specified period of time. The 1985 law on the other hand directs a warranty on the specific performance requirements of the contract and does not require any growth or staged improvement in performance.

The services are working out detailed procedures for the administration of warranties. Most of the impact of the FY 1985 law is still in the future. This is because contracts for major systems awarded in 1985 will not commence deliveries until approximately 1987 and then a year or more will follow before deliveries are complete and we begin to get corrections under the 1985 warranty law. The Joint Logistic Commanders (JLC's) have recognized the need to improve warranty administration and are applying resources to this area. The Air Force recently issued a Warranty Administration Plan which outlines the Air Force approach to implementing the FY 1985 Warranty Law. Additional refinements are being made to the existing AF Federal Acquisition Regulation Supplement on major system warranty policy to provide expanded coverage on warranty administration. There are other steps being taken by the Air Force to further improve their overall implementation of the FY 1985 warranty law.

Mr. McDade. Do you know what independent evaluation has been made in other services and defense agencies? Is there a critique going on as to how this warranty works?

Dr. Wade. We have had interaction amongst OSD and the three services. Occasionally, we review it in the Defense Council on Integrity Management Improvement. As of now the interaction is going well. The bottom line which we should to be careful about over the coming years, is how do we go about making a viable cost analysis The Air Force has a super office at Wright Patterson AFB that is helping in this regard. My judgment is that the initiative from the Congress is worthwhile, and we will see it through to make it fully operative.

Mr. McDade. Do you have a system by which you assess effectiveness of the other services?

Dr. Wade. Not at the OSD level. It is too soon.

Mr. McDade. Do you plan to do that?

Dr. Wade. Over here we will learn from the three services, taking where demonstrated the service pluses and making it DoD-wide. There will be a learning process.

Mr. McDade. We want to encourage you to be in the loop so we can see that we get a unified program.

ECONOMIC RATES PRODUCTION

Mr. Secretary, one of the so-called "Carlucci" initiatives in 1981 was to achieve economic production rates for DOD weapon systems. In January 1986, the General Accounting Office raised concerns about the Department's implementation of this initiative.

GAO reports that while the OSD is actively monitoring the use of economic production rates on 50 DOD weapon systems, these 50 systems do not include many major weapon systems being procured by DOD.

Dr. Wade, why is that?

Dr. Wade. During the course of our review of Service Program objectives memorandums, economic production rates is one of the key elements that we evaluate. We are providing sufficient oversight, but in reference to the staff discussions with the various committees of the Congress, there is a place for better coordination and communication. I would also observe here that, as the budget has been drawn back over the past couple of years, and we look to similar pressures over the next couple of years, this is an area in which I think we will be hurt.

When we are in production, it is better to keep the program moving along, even if at less than an efficient production rate than to cancel the program. Once the program is running even if we have to cut it back, I would argue that production, even if inefficient, should be kept going for if you have in the meanwhile a crisis or even a war, you can increase the rate.

Mr. McDade. Why are no major systems involved?

Dr. Wade. Most of the major systems are weighed from two aspects. One is multiyear procurement. For example, we are putting the FA-18 into a multiyear program. That is the best way to get efficiency in production. The Patriot is another multiyear request for 1987. Most of the 40 programs approved for multiyear entail subsystems of major programs.

I am not sure I understand the thrust of the question, Mr. McDade.

Mr. McDade. I think I guilded it a bit when I said any weapon system.

Dr. Wade. We have a mix.

Mr. McDade. Why, according to GAO, are the military services inconsistently reporting economic production data which has limited visibility in the budgeting process?

Dr. Wade. I will have to go back and look at that specifically, Mr. Chairman.

Mr. McDade. Furnish it for the record if you will.

[The information follows:]

Instructions on submitting economic production rate (EPR) data on major systems were issued to the military services by the Defense Resources Board on March 31, 1986. The instructions call for displaying the unit cost at several different rates of production in the program objectives memoranda (POMs) submitted at the start of the yearly budget cycle. The cost figures are to be submitted in terms of unit procurement cost which is well defined in DoD Instruction 5000.33, paragraph D.4.d.

Mr. McDade. Why has the OSD not clearly defined what data should be reported, or established formal, written criteria for selecting weapon systems to include in the reporting process?

Dr. Wade. I am not clear to your question, Mr. McDade. I would like to take that for the record.

[The information follows:]

OSD has not found it advantageous to issue formal written criteria for selecting those systems to be reviewed from an economic production rate standpoint. The dominant cost characteristic to be sought is a high sensitivity to change in rate. Factors other than cost may preclude selection such as imminent production phase out, warm base considerations or low inventory requirements. In lieu of formal criteria, the list of systems is amended each year in consultation with the Services during staffing of the POM Preparation Instructions.

Mr. McDade. Dr. Wade, why has OSD failed to require the services to develop and provide unit cost data at various production levels as part of the normal budgeting process?

Dr. Wade. There is a question of just how much detail we need at the OSD level.

CAD/CAM Technology

Mr. McDade. Dr. Wade, the committee is interested in the efficient utilization of computer-aided design/computer-aided manufacturing technology and resultant automated technical data by the Department of Defense. The Navy recently reported to the committee that the payback from investment in such equipment is 20 times the investment rate.

Dr. Wade, what guidance have you provided to the services to obtain and utilize CAD/CAM technology as soon as possible?

Dr. Wade. First of all, in reference to CAD/CAM, I would also add the CALS program, the number that the Navy is quoting is about right. Every one of these programs has the extra pressure behind it in the sense of getting the most efficiency out of the cost. When we spend $150 billion for procurement of our systems, we should really take the lead, in a national sense, in areas like CAD/

CAM, flexible manufacturing techniques, to move both the DOD and our country along in the overall quality of its product. So we are very high on these programs.

Mr. **McDade**. Dr. Wade, is there a centralized DOD plan for the acquisition of this technology or have you allowed each service to independently pursue its own programs?

Dr. **Wade**. We have lead in the sense of overall DOD policy. The execution is today fully in the hands of the services.

Mr. **McDade**. Do you attempt to coordinate?

Dr. **Wade**. Yes. We attempt to provide the incentive, moneys, and coordination to move these programs along.

Mr. **McDade**. You think you have a handle on it at your level?

Dr. **Wade**. No. I would argue that we need somewhat more centralization even in execution oversight to make sure that happens.

Mr. **McDade**. Are there OSD standards developed and required before the services make very expensive investments in this technology?

Dr. **Wade**. Not enough.

Mr. **McDade**. We want to work with you to try to remedy that problem.

Dr. **Wade**. Yes, sir.

Mr. **McDade**. Thank you, Mr. Chairman.

VALUE ENGINEERING

Mr. **Chappell**. Mr. Dicks?

Mr. **Dicks**. In its 1986 report, the committee required DOD to report on its spare parts management reforms. The Department submitted a very comprehensive and responsive report. One section of the report states that "programs such as value engineering are also continuing to make major contributions to spares cost effectiveness."

Could you describe how the Department describes "value engineering,"?

Dr. **Wade**. Value engineering is made up of two parts. One, is an attempt where we find our specifications in a piece part, to get the overspecification out so it can be easily broken out and competed. Secondly, value engineering is a technique that we use with our industrial partners wherein an engineer can come up with an idea on how to save money. The company then recommends the action, and thereafter, both the company and the DOD will share in the money saved.

We have a major awards program in value engineering. There is a yearly award ceremony and it is highly respected by both DOD and industry. We can do better, it is a successful program, and we are giving it even more emphasis for the future.

Mr. **Dicks**. For the record, how will value engineering contribute to lower spares prices? You may want to expand for the record.

[The information follows:]

At major spares buying activities, the value engineering function is supporting efforts to develop or improve technical data packages. This data is then used to increase competitive procurements of formerly sole source items. These same activities are also encouraging contractors to submit value engineering change proposals. If accepted and implemented by the Government, the contractor then shares in the resulting net savings. Finally, in-house value engineering studies are being conducted on spares whose price does not reflect their intrinsic value. In-house value engineering proposals are then developed to incorporate alternative materials, designs, or items which are less costly but continue to deliver requisite performance, quality, and reliability.

Mr. DICKS. Why has the Department not been able to achieve its established value engineering savings goals in any of the last nine years?

Dr. WADE. I will have to look into that. I think that if we haven't made the goal, the goal has been made too high. It does take money upfront and as the budget comes down, you will see less and less interest. That would be a step backward. Again, I would expect with increased centralization at the DoD level that you would see more positive results.

Mr. DICKS. Do you support that personally?

Dr. WADE. Yes.

Mr. DICKS. In fiscal year 1984, the Department was $375 million, or 57 percent below its value engineering savings target. How did you do in fiscal year 1985? Maybe you could put that in the record.

[The information follows:]

In Fiscal Year 1979, a goal of seven tenths of one percent of the total procurement obligational authority, as specified in the President's budget submittal to the Congress, was set as a dollar savings goal for contractor submitted value engineeringg change proposals. In Fiscal Year 1985, the totals were as shown in the following chart:

[In millions of dollars]

Department	Goal	Reported savings
Army	147.4	174.2
Navy	260.0	75.9
Air Force	336.4	77.9
Total	743.8	328.0

The Army met the goal. Overall, the DoD achieved 44 percent of the value engineering change proposal goal. However, the results may have been affected by changes to the value engineering change proposal reporting basis that took place in Fiscal Year 1985. In response to the DoD IG audit, savings are no longer reported when a value engineering change proposal has been technically accepted. Instead, savings are reported after the contract change has been issued and the final net savings amount negotiated between the contractor and the Government. It is likely that this lag reduced the savings that would otherwise have been reported if the Fiscal Year 1984 procedures had still been in effect.

Mr. DICKS. A December 1985 DOD Inspector General audit on value engineering states "although top-level management emphasis has been given to the program throughout the military departments, there has been little substantive improvement at the contracting officer level, where the success of the progam is ultimately determined."

Is that accurate and if so, why is that?

Dr. WADE. I don't think the statement is accurate. Our interest from the OSD level can't be any higher in this regard. Perhaps incentives in the context of providing some upfront money is a worthwhile idea, but I am not sure.

Mr. DICKS. The audit states that value engineering proposals had been received for less than 3.2 percent of eligible contracts in fiscal year 1984. What are the statistics for fiscal year 1985 and goals for fiscal year 1986?

Put that in the record, please.

[The information follows:]

The statistics quoted in the DoD Inspector General audit report represent the sample surveyed, not overall Department statistics. Some years ago, the Department, in furtherance of Administration guidance to reduce the reporting burden, ceased to track the number of contracts awarded which contained a value engineering clause. The Department, therefore, is unable to offer any comparable statistics to those developed during the months the DoD Inspector General audit was conducted. With certain limited exceptions, all contracts that equal or exceed $100,000 and all contractions, all contracts that equal or exceed $100,000 and all contracts for spares that equal or exceed $25,000 are required to contain value engineering clauses. In Fiscal Year 1984, the DoD reported that contractors submitted 1,569 value engineering change proposals. In Fiscal Year 1985, there were 1,555 value engineering change proposals submitted. A breakdown by DoD Component follows:

NUMBER OF VECP's SUBMITTED BY YEAR COMPONENT

Component	Fiscal Year	
	1984	1985
Army	974	980
Navy	195	272
Air Force	181	203
DLA	219	100

At the Department of Defense level, we have not assigned goals for the number of VECP submittals. We prefer to continue to use a savings goal. The Army, however, has experimented with goals for VECP submittals and the Navy has developed training goals. The Air Force and the Defense Logistics Agency also report increased emphasis on value engineering training. One of the purposes of this additional training is to increase the receptivity of Government personnel to contractor initiated value engineering change proposals.

Mr. DICKS. The Inspector General report states, "The Air Force plant representative offices did the least to promote the VECP program to their contractors and received only 10 VECPs in fiscal year 1984." What causes the low interest level on the part of the Air Force, and has the situation improved?

Dr. WADE. I don't want to speak for the Air Force. There is a question of personal interest and how to go about gaining efficiencies in our program. I recognize there has been a difference across the three services, but we have been making progress and as I indicated before, with improved centralization as noted by the Packard Commission we will see more of a uniform quality in our approach across the Department of Defense.

PACKARD COMMISSION

Mr. DICKS. The Packard Commission is going to continue to make its various recommendations, but is the Department going to come forward with its own legislative package based on the Packard recommendations?

Dr. WADE. Where legislation is required, yes, sir.

Mr. DICKS. I think that would be useful, I am sure the Department may not to agree with everything the Packard Commission recommends. But it seems the Department ought to have a position on it.

Dr. **Wade**. We have taken steps to move in that direction.

Mr. **Dicks**. It has been suggested that we amend civil service laws to permit flexible permanent management policies for acquisition professionals and to expand opportunities for the education and training of all acquisition personnel.

Are you taking any steps there to seek legislation relief so that you could implement this?

Dr. **Wade**. As we follow up not only the Packard recommendations, but those that I have been pushing for the last six months, most of the improvements can be done within the Department without having legislative changes. In those areas where they are required, we are working on that. Having the blessing of Congress, and their stamp of approval is terribly important, in my personal point of view.

Cost of Money

Mr. **Chappell**. Dr. Wade, how much cost of money funding is included in the DOD request?

Dr. **Wade**. I can provide that for the record.

[The information follows:]

The Administration is still considering the best approach to institute an alternative personnel system based on the Navy's experiment at China Lake Naval Weapons Center. The final approach may be cost neutral, although China Lake experienced about a six percent increase in salary cost under their experiment.

Mr. **Chappell**. A December 18, 1985 program budget decision No. 130 stated that the Navy's budget estimate deletes about $150 million in shipbuilding cost of money funding and the document goes on to state "since competition has provided all the stimulus needed to increase cost savings capital investment, these funds are no longer required."

Do you know whether or not the Navy is the only service taking such action?

Dr. **Wade**. I will have to go back and look at that. That is a controller issue. I will provide it for the record.

[The information follows:]

The Navy is the only Service which specifically identified budget reductions due to cost of money funding levels. The Navy only identified this reduction in the shipbuilding line item. In all other Navy budget line items and the budgets of the other Services, changes due to cost of money funding levels are included in the aggregate numbers.

Mr. **Chappell**. I understand that we have Admiral Loftus here today. I wonder if we might ask you some questions.

Admiral **Loftus**. I am Admiral Loftus, the Comptroller at Naval Sea Systems Command.

CAS 414

Mr. **Chappell**. Admiral, several years ago the Navy and this committee expressed concern as to whether Cost Accounting Standard 414 has continued relevance in light of current profit policy. Additionally, questions were raised as to whether CAS 414 induces investment in cost reducing facilities. In February of this year, you signed off on an audit alert memorandum to bring attention to the handling of facilities capital cost of money on NAVSEA's cost-plus contracts.

Since this is a rather complex issue, can you, in layman's terms, provide a little background and discuss the Navy's basis for issuing this audit alert?

Admiral LOFTUS. I think so, sir. Last year as part of our internal review program, we decided to look at all of the cost-plus award fee contracts or those that were active and many of the inactive ones to determine how the application of the award fee was being handled and in doing so we discovered discrepancies in the way the facility's capital cost of money was being handled.

Capital cost of money is an imputed cost, a money rate applied to the facilities which are employed in defense contracts. It is not tied—I think many people misunderstand cost of money and think that it is in fact a substitute for the interest rate which is used when you borrow money. It is not that. It is a rate which is established and applied to the facilities that you use for defense contracts.

Mr. CHAPPELL. Whether it be government or privately owned?

Admiral LOFTUS. It is for contractor facilities, so it would be applied to their facilities. It is a reimbursement of that cost. When we did that, we saw some discrepancies in the way that it was being handled in the cost-plus contracts.

In those contracts, cost of money is either reduced from the base fee or it is not an allowable cost and when we looked at the contracts, there were several discrepancies, actually there were four that we picked up where it was in fact included in the invoices to be paid to the contractor where it shouldn't have been.

We immediately went to the contractors involved and requested that they provide us with a reimbursement for those dollars. As a matter of fact, the first contractor we had a check in hand for $9,200 within two weeks. The other contractors we worked it through the paying office to eliminate the costs which had been applied in their prior invoices from the next payment and all of the reimbursements have been made.

Mr. CHAPPELL. What does that total?

Admiral LOFTUS. We pulled back $328,000. Had we not done this in the audit and pulled it back, the amount would have gone to about $825,000. We looked at 132 contracts. We identified 132 contracts active and inactive in that area and they are broken into various types of services, and those were the four instances that we found and we are pretty convinced that we do not have a lot of misapplication in this area, but we felt it was at least wise to put out an alert to all our facilities to say be aware of how this is handled so we don't have this happening again.

Mr. CHAPPELL. Are you familiar with the fact that the Navy deleted $150 million in shipbuilding costs?

Admiral LOFTUS. Yes, I am.

Mr. CHAPPELL. Why was it deleted?

Admiral LOFTUS. The Navy, in conjunction with OSD, is examining all of the areas which involve profit policy, financing, investment strategies and so forth and it was felt that since we had taken some action two years ago to reduce the amount of money that in fact was paid out for cost of money, that we would reduce the amount, as a budget reduction, reduce the amount of money that was being applied for cost of money in the 1987 budget.

Mr. CHAPPELL. Well, you note on page 3 of the memorandum, "In view of the departmental position of FCCM and overpayments recently discovered, it is directed that the handling of FCCM with NAVSEA contracts be evaluated commandwide."

Have you completed that?

Admiral LOFTUS. Yes.

Mr. CHAPPELL. You have the moneys you are talking about—this covers that?

Admiral LOFTUS. Yes. The policy in effect since we did the audit and recovered the dollars is we now have a clause in all our cost-plus contracts which disallows facilities cost of capital money as allowable costs into the contracts so we don't have to worry whether they are taking it out of the base fee or it is an allowable cost.

Mr. CHAPPELL. Give me the number you recovered.

Admiral LOFTUS: We recovered $328,000.

Mr. CHAPPELL. How far back in time did you go?

Admiral LOFTUS. 1977, sir.

Mr. CHAPPELL. Did you find this true all the way back to 1977?

Admiral LOFTUS. No. We found it true only in some of the engineering services contracts. In looking at more than 50 percent of the weapon systems contracts, amounting to about $4 billion, we found no instances where this was——

Mr. CHAPPELL. Was most of this in the last several years?

Admiral LOFTUS. Yes, sir.

Mr. CHAPPELL. And this had to do with multiyear contracts?

Admiral LOFTUS. No, sir.

Mr. CHAPPELL. I guess we don't know what the other services are doing, but it seems strange that the Navy might be the only ones that are deleting these funds.

Do you think that your work has been inclusive, the overpayments discovered have been inclusive or do you believe you will find more?

Admiral LOFTUS. No, I think that what we have found is basically all there is out there.

Mr. CHAPPELL. So we don't know whether the other services have done the same thing you have done or not?

Admiral LOFTUS. No, sir. I have no knowledge of that.

Mr. CHAPPELL. Is that your area, Dr. Wade?

Ms. SPECTOR. The FAR requires what he is talking about. The FAR requires that on cost-plus award fee contracts, you either disallow cost of money or credit or deduct it from the base fee. Evidently some of the contracting officers at NAVSEA were not complying with that. We have no reason to believe the other services are not complying. We found an error in auditing, a failure to comply with regulations that exist.

Mr. CHAPPELL. This was found by audit?

Admiral LOFTUS. By our internal review team.

Mr. CHAPPELL. How certain are you that the same mistake hasn't been made in the other services?

Ms. SPECTOR. I am not certain other than that it would be against regulations if they were doing it. I don't know that they have audited or what they have done in that regard.

Mr. MAGLIOCHETTI. The audit alert that was put out by NAVSEA covers one issue. The second issue is the deletion of cost of money of $150 million in the shipbuilding account. Would that not apply to the other services as well? The other services budget requests contain cost of money, do they not?

Ms. SPECTOR. Yes. We disallow interest on all contracts. It is unallowable. The thought was, we would pay them imputed interest when they acquired facilities, which would reduce the prices of the items they produce. If we allowed cost of money on facilities investments, it would encourage facilitization, and it has been shown that it does.

It was supposed to have been credited against profit and deducted from profit. That is being done. There is a GAO report that was issued in the past week or two that continues to endorse this as having the desired effect of encouraging facilitization.

The recent DFAIR study said we should stop giving imputed interest on land, give a much higher rate on plant equipment, give a reduced rate on buildings and zero on land. They are recommending focusing our policy better, but continuing to encourage facilitization of industrial plant equipment.

Mr. MAGLIOCHETTI. There are arguments that the CAS 414 is not relevant. In fact the Navy study several years ago indicated that they were not receiving cost saving facilities as a result of their payment. So there is a bone of contention as to whether or not it is having its desired effect.

Also some contended there has been "double dipping" or overpayment.

Is this addressed in this current budget request?

Ms. SPECTOR. It is very difficult to ferret out a small piece in a current budget request and know if that is adequately addressed. The DFAIR says one half to one percent. That results from a calculation revolving around this.

We were incentivizing facilitization in the area where there would be a minimum return on contracts, so DFAIR recommends taking it off those areas and recommends reducing going in profits by one half to one percent.

Those adjustments are in DFAIR. Getting precise calculations out of budget numbers is not my area and difficult to do.

Mr. MAGLIOCHETTI. Secretary Taft signs off on this PBD and says, "Go ahead, Navy. Take out $150 million." The question is why is that not done in the other services? If you could provide that for the record, I would appreciate that.

[The information follows:]

Cost of money is a contract cost element considered in all budget requests. The number of companies in the shipbuilding industry is small compared to other defense industries, and it is easier to identify the impact of a change in a specific cost element. The Navy could specifically identify the impact of cost of money only in the shipbuilding budget line item. In all other Navy budget line items and the budgets of the other Services, changes in cost of money funding levels are included in the aggregate budget numbers.

DEFENSE FINANCIAL AND INVESTMENT REVIEW (DFAIR) STUDY C

Mr. CHAPPELL. Dr. Wade, last year your office completed the Defense Financial and Investment Review, which has been known as the DOD profit study. Briefly discuss for the committee the major conclusions of the study and what actions are being taken or contemplated at this time.

Your study found that the profit policy charges under Defense Acquisition Circular 76-23 produced an "unintended increase" in profit objectives of .5 to 1 percent. How long have these "Unintended increases" gone unnoticed?

Dr. **Wade**. At least five-plus years. We have cut back on progress payments 80 percent in order to correct that problem which has been around for about five years more.

Mr. **Chappell**. What base was used, 1 percent of what amount?

Dr. **Wade**. It is the profit that has been provided. It has been on the order of one half to one percent higher than what is reasonable based for example on the difficulty involved in the program.

Mr. **Chappell**. Do you know in total how much of an unintended increase we are talking about?

Dr. **Wade**. I don't know, but Ms. Spector might.

Ms. **Spector**. It would not apply on the competitive contracts because we don't use weighted guidelines to determine profit on them. I would have to figure that precisely and provide it for the record.

Mr. **Chappell**. Would you do that?

Ms. **Spector**. Yes. It is one half to one percent.

[The information follows:]

The unintended increase inprofit objectives of .5 to 1.0 percentage points covered the three-year period 1981–1983. The amounts were based on those contracts which employed the Weighted Guidelines Method of establishing negotiation objective for profit and report those results on a DD Form 1499, "Report of Individual Contract Profit Plan." The DD Form 1499 is DoD's management information system for reporting profit objectives and is required under DoD regulation on all contracts using the Weighted Guidelines Method that exceed $500,000. For the period covered in the DFAIR report, the totals were as follows:

[Dollar amounts in billions]

	Cost objectives	Number of actions
1981	$13.4	1,826
1982	24.2	2,369
1983	35.6	2.281

It should be stressed that, although there was an unintended increase in profit objectives, this does not mean that profits actually realized by contractors were correspondingly .5% to 1.0% too high. The unintended increase was based on profit objectives; realized profit would depend on the profit level subsequently negotiated as part of the contract price and the actual results of contract performance. Furthermore, there are a number of costs that are not allowed on defense contracts and, therefore, must be absorbed through contractor profit.

Mr. **Chappell**. What actions have been taken to stop these "unintended profit increases"——

Mr. **Wade**. We have lowered the progress payments to take into account the profit.

Mr. **Chappell**. Is it fully offset?

Mr. **Wade**. Yes, sir, in my opinion it is as close as one could get, with the facts as then known.

Mr. CHAPPELL. Please answer the remainder of the questions in the record.

[CLERK'S NOTE.—Questions submitted for the record and the answers thereto follow:]

PACKARD COMMISSION

Question. Dr. Wade, recently the Packard Commission identified many areas in the Department of Defense where savings could be realized.

Previous efforts to reform the DoD acquisition system failed largely because of lack of follow-through and implementation. Dr. Wade, what do you think will be done differently this time?

Answer. I'm not sure that I can agree with your premise that previous reform efforts failed because of a lack of follow-through. A number of previous efforts to improve the acquisition process have been successful. As an example, the Defense Acquisition Improvement Program (DAIP) continues to result in substantial cost avoidance in areas such as multiyear procurement, more economical production rates, increased competition etc.

On April 2, 1986 the President directed the Department of Defense to implement the recommendations of the President's Commission on Defense Management. The Secretary of Defense immediately issued directions for reports to be submitted to him which would identify the steps necessary to effect the recommendations. Direction from the highest levels of this administration relative to the Packard Commission recommendations will assure their successful implementation.

Question. How many Packard Commission reforms and savings measures will DoD implement and what will be the timing of the implementation of these reforms?

Answer. The President has directed the Department of Defense to implement the recommendations of the President's Commission on Defense Management where it can be accomplished by executive action. In furtherance of that end the Secretary of Defense issued a memorandum on April 1, 1986 directing that a series of reports be prepared which would contain recommendations for the implementation of the various sections of the Commission report. These reports are due to be submitted to him within sixty days. On receipt of these reports appropriate implementing actions will be directed by the Secretary. Some of the Commission's recommendations, such as the establishment of position of Undersecretary of Defense for Acquisition, require legislative action.

Question. The Commission recommends a high priority on building and testing prototype systems. What policy changes do you have in mind that will implement this recommendation?

Answer. The Commission's recommendation relative to building and testing prototypes has a number of ramifications. The Secretary of Defense has tasked the Director of Operational Test and Evaluation to analyze DoD operational testing techniques in consultation with the Secretaries of the Military Departments. This analysis will reflect full consideration of the findings and recommendations of the interim Report of the Commission on Defense Management, and will include appropriate recommendations for improvements. At the same time the Defense Research Projects Agency (DARPA) is conducting a study on the subject of prototype testing in response to a recommendation of the Commission that the DARPA role in prototye testing be emphasized, particularly in the area of joint programs. A third effort is underway in my office to articulate the Commission's recommendations on prototyping in appropriate DoD policy documents. At the conclusion of each of these efforts an integrated look will have to be taken to weave them into a consistent set of modifications to current policy.

Question. When will you institute "baselining" for major weapon systems as a mandatory policy to control proliferation of engineering changes during production?

Will this apply to other major defense acquisitions, such as multi-hundred million dollar computer systems, which are not classified as weapon systems?

Answer. A report to the President from the Secretary of Defense is scheduled for July 1, 1986 that outlines our plans for baselining. This report also includes our plans for other Packard Commission recommendations.

We are currently planning to apply baselining to major systems reviewed by the Defense Systems Acquisition Review Council. These major systems include several programs that make extensive use of computers. Generally these programs are over the $1 billion mark we use as a criterion for selecting major systems for review.

Question. Given the current budget environment, is it feasible to increase the Department's use of multiyear procurement? What candidate systems currently exist?

Answer. Since multiyear procurement using the Economic Order Quantity (EOQ) method was first approved for major systems with the FY1982 buget the Department has submitted sixty candidate programs to Congress for approval. Forty were approved for an estimated savings of $6.2 billion. Our FY1987 Budget has an additional seven new candidate programs which are estimated to save another $2.1 billion. These FY 1987 candidates consist of the UH/EH-60 Airframe, Stinger Missile System, Patriot Missile System, F/A-18 Aircraft, MK-45 Gun Mount, HARM Missile, and the Defense Support Program. We believe our use of multiyear contracting has been exceptionally successful and will continue even in light of the current budget environment. Although there is an up front investment required to implement the funding policy DOD has chosen for multiyear, the amount of savings in the outyears more then off-sets this initial investment. Not all programs are suited for multiyear procurement as there is a difficult set of criteria that a program must satisfy to be eligible for multiyear in addition to the amount of savings a program can generate. Even in difficult budget times there are programs that must continue at reasonable economic production rates. Usually these are the programs in which the Department and the Congress mutually recognize a need to avoid disruptions to their production and fielding schedules. These are the type of programs that are the most viable candidates for the application of multiyear contracting. Some of these programs have used multiyear more than once such as the UH/EH-60 Airframe, MK-45 Gun Mount and the F-16 Airframe. Again we believe the multiyear contract method has a continuing place in almost any budget environment for some select programs.

EXCESSIVE USE OF UNPRICED CONTRACTS

Question. The Committee understands that the Defense Department had approximately $28 billion of unpriced contracts on September 30, 1985, an increase of $5 billion from the previous year. Under such contracts, DOD orders items without worring about their price. However, when it comes time to negotiate with the contractors on price, DOD has lost most of its leverage.

Dr. Wade, as the Department's senior official for acquisition, why have you authorized the use of so many unpriced contracts?

Answer. The use of unpriced contracts is governed by Federal Acquisition Regulation 16.603. The regulation provides for their use when the Government's interests demand that the contractor be given a binding commitment so that work can start immediately and negotiating a definitive contract is not possible in sufficient time to meet the requirement. After I became aware of the large backlog of undefinitized contract actions, aggressive action was taken to get the problem under control.

Question. Why did the Department leadership get involved only after the General Accounting Office raised the subject and Mr. Dingell's committee publicized it?

Answer. Congressman Dingell raised this issue in December 1985. In August 1985, I became concerned that there was a problem with the use of unpriced actions. We obtained a report in September 1985, that showed billions of dollars in undefinitized actions as of June 30, 1985. As a result, the Deputy Assistant Secretary of Defense (Procurement) met with Service representatives to discuss their plans to reduce the backlog. On November 12, 1985, I issued a memorandum to the Service Secretaries and Director, Defense Logistics Agency directing that the backlog be reduced 32 percent by the Navy, Air Force and DLA, and 10 percent for the Army by the end of the fiscal year. The Army's goal was lower because they had already taken actions that substantially reduced their backlog.

Question. Was the Department's increasing use of unpriced contracts a conscious decision on your part?

Answer. No, the use of unpriced contracts is governed by Federal Acquisition Regulation 16.603. In August 1985, when I became aware that we had a problem, action was taken to reduce the backlog of undefinitized contract actions. To meet the reduction goals, the Services must place stricter controls over the use of unpriced actions.

Question. We understand that the increased use of unpriced contracts, particularly in the Air Force, has been for spare parts. Won't this lead to future spare parts pricing abuses that Secretary Weinberger's policies are aimed at eliminating?

Answer. One of the spare parts reform initiatives is to place greater control on the use of contracts that are not firm priced at the outset. However, our program to control the use of unpriced contracts applies across-the-board to all procurement actions, not just to spare parts. In the last six months, we have reduced the backlog of undefinitized contracts by about $6 billion.

Question. How will the Department implement this policy?

Answer. The policy was implemented by the Assistant Secretary of Defense (Acquisition & Logistics) memorandum dated November 12, 1985.

SPARES FUNDING LEVELS

Question. In the last year's budget to Congress, the Defense Department forecast needing $13 billion in spare parts funding in fiscal year 1987. The current budget requests only $8.6 billion in fiscal year 1987, and is in fact lower than the fiscal year 1986 spares funding appropriated by Congress, before Gramm-Rudman-Hollings.

Why is this thought to be acceptable?

Answer. You cannot compare a budget figure with an outyear forecast. The FY 1987 budget you have this year is an item-based computation. The FY 1987 forecast you had in last year's budget was just that, a forecast. Also, the current budget request reduces the planned growth rate of war reserve stocks of spare parts due to funding constraints and the need to balance competing priorities. Finally, efforts to improve the procurement of spare parts have reduced prices, and together with reduced inflation, more value can be purchased for less dollars.

Question. Are you aware of any Services reporting the estimated "number of days of combat support" dropping in the future due to lack of spare parts funding?

Answer. None of the Services have reported reductions in current sustainability levels, nor do we expect such a situation to occur. Because of fiscal limitations and the need to achieve a balance in completing priorities, the FY 1987 budget request reduces the planned rate of *growth* in war reserve stocks of spare parts. However, the Department's investment in war reserve stocks has improved dramatically since 1980 and is at the highest level ever.

Question. Do you see future "cannibalization" rates rising or falling?

Answer. The reduced level of spares funding in the FY 1987 request should have no adverse impact on the cannibalization rate, since the requirement for peacetime operating stocks is fully funded. Given the requested funds, we would expect the cannibalization rate to hold steady or decrease slightly.

Question. The current Air Force 5 year plan (FY 1987–1991) is to buy 1,590 new figher aircraft, an increase of 258 aircraft from last year's plan. Yet, the Air Force fiscal year 1987 budget submission for aircraft spare parts is down $2.6 billion from the fiscal year 1987 estimate in last year's budget. Worse, the Air Force claims the aircraft replenishment spares funding only supports 56 percent of the requirement.

If the Air Force cannot recover, who will be to blame?

Answer. The FY 1987 request fully funds the Air Force requirement for peacetime operating stocks, and there is no anticipated shortfall of parts to support the day-to-day operation of the increased numbers of aircraft.

Question. In your opinion, Dr. Wade, what is the sense of further expanding the size of the Air Force from 37 to 40 tactical fighter wings if we already cannot afford the spares funds for the current force?

Answer. The FY 1987 request fully funds the Air Force requirement for peacetime operating stocks necessary to support the day-to-day operation of the tactical fighter force. Due to funding constraints and the need to achieve a balance in competing priorities, the Department has had to reduce the growth rate in building war reserve inventories of spare parts. This should not preclude us from supporting peacetime requirements for the planned increase in tactical aircraft.

Question. The Committee understands that OSD reduced over $1 billion from the Air Force's fiscal year 1987 replenishment spares budget before it was sent to Congress.

Dr. Wade, as the Department's senior official responsible for logistics, why did you take this action?

Answer. The reductions were made to: achieve better use of prior year uncommitted funds; improve program execution performance; delete the carryover of a prior year unfunded war reserve requirement; to delete ill-defined requirements; and to eliminate unjustified funding of administrative leadtime.

Question. The Congress reduced the Air Force's fiscal year 1986 replenishment spares budget request by $800 million, due primarily to faulty requirements disclosed by the General Accounting Office. Had these requirements in fact been valid, we would have expected the Air Force fiscal year 1987 budget to go up by at least $800 million from the estimate made a year ago. Instead it went down by $2.6 billion. Why is there so much volatility in the Air Force replenishment spares budgets to Congress?

Answer. As previously stated, the Air Force spares forecast for FY 1987 in last year's budget cannot be compared directly to the FY 1987 budget request. Due to funding constraints and the need to achieve a balance in competing priorities, the FY 1987 request reduces the planned rate of *growth* in war reserve inventories of spare parts. Also, factors such as improved reliability and maintainability of the inventory, and lower prices from better procurement practices and lower inflation account for some of the reduction in the overall requirement for spares funding.

Question. In terms of the number of days of combat capability, and considering the balance of spares with other logistics factors (e.g. fuel, munitions, personnel), are the three Services in approximately the same shape?

Answer. While each of the Services has its relative pluses and minuses among all logistics factors, on balance they are in approximately the same shape in terms of overall sustainability.

EFFECTIVENESS OF THE DSARC PROCESS

Question. The Defense Systems Acquisition Review Council, or DSARC process provides a formal mechanism by which the Department's top management reviews and approves major weapon system programs at critical milestones. In essence, DSARC provides the approval structure behind the acquisition process.

A recent DoD Inspector General report on the effectiveness of the DSARC process notes that:

A. None of the 16 major weapon systems reviewed fully complied with the DSARC program documentation; and

B. 60 percent of systems reviewed were using accelerated acquisition strategies in non-compliance with DSARC policy, which reduces OSD oversight and effective decision-making. Why does the DSARC process have inadequate implementation controls?

Answer. The IG report you mention went on to say in the next sentence: "However, we did note improvements in overall conditions since our Phase I review," We see no systemic problems in the DSARC process. The paperwork we request of the Services is to aid in the decisionmaking process at given milestone points in the development of a weapon system. In addition to the paperwork, we ask the Services to present verbal briefings addressing major issues that my staff uncovered. It is, of course, impossible for the IG to audit a briefing that occurred in the past. In certain cases some of the paperwork is not submitted on time but the information needed to make a decision is obtained before the decision is made. One cannot conclude that these are systemic problems in the process.

Question. Dr. Wade, as senior official responsible for acquisition, how will you respond to the Inspector General's findings?

Answer. Since USDRE is responsible for DSARC Milestones I and II when the accelerated acquisition strategies are typically approved I will work closely with that office to vigorously review programs at that point.

Question. Provide for the record the specific actions your office will take to strengthen and improve the effectiveness of the DSARC process.

Answer. The Packard Commission has recommended some changes in the decision process. We are in the process of implementing those recommendations and are confident that some of the changes planned will improve the effectiveness of our decisionmaking process for major weapons acquisition.

VALUE ENGINEERING

Question. What actions do you plan in light of the IG findings?

Answer. The recommendations contained in the IG audit report are being implemented by changes to DoD Directive 4245.8, "DoD Value Engineering Program." A draft of the proposed directive was forwarded for coordination on April 23, 1986, with replies due in 60 days. The changes are scheduled to be implemented in Fiscal Year 1987. The proposed changes include: (a) direction to each DoD Component to forward to us a copy of its annual value engineering program plan; (b) specifying the use of the program requirement clause in the initial production contract following full-scale engineering development for major system acquisitions; (c) permission to reuse all or part of the benefits at a level that creates an incentive to participate in the DoD Value Engineering Program; and (d) adding to the semi-annual statistical report information concerning contract administration service staffing patterns in support of the contractor value engineering change proposal program, the average value engineering change proposal processing time and the number of value engineering change proposals requiring more than 45 days to process.

COMPETITIVE CONTRACTS FOR SPARE PARTS

Question. In each of the last five years, what has been the percentage of spare parts contracts that has been truly awarded through free and open competition?

Answer. Data as to the number of spare parts contracts awarded by DoD is not collected for the Department. Spare parts are frequently purchased as additional items in conjunction with contracts for systems and equipments. The level of detail required to track contracts containing requirements for spare parts would dictate excessively costly data systems. However, we estimate that approximately $12.5 billion were obligated in 1985 for replenishment spares. About 45% of the dollars obligated were attributed to parts coded for competition in the breakout program.

Question. A Military Logistics Forum article says that under current procedures for qualifying sources to manufacture critical spare parts, a contractor must have made a part before in order to be approved as a source. Dr. Wade, is this true and does this requirement limit competition to those subcontractors that have made a part for a prime contractor?

Answer. Critical spare parts require close control of the manufacturing process, or quality or both, and some form of qualification may be associated with the part. Qualification procedures have been prescribed in 10 U.S.C. 2319 and 41 U.S.C. 253(e). the Federal Acquisition Regulation implements these statutes as of August 30, 1985. The Department follows these regulations for qualifying sources in order to optimize competition where possible in accordance with the particular circumstances applicable to that part.

Question. What action has been taken by the Department to reassess its definition of "actual manufacturer" used to implement recent legislation?

Is it true that under the current DoD definition, prime contractors qualify as "actual manufacturers" of spare parts even if they do not manufacture the parts themselves?

Answer. The DAR Council has established DAR Case *86-23* to reassess the definition of "actual manufacturer" as defined for the purpose of screening spare parts in the Breakout Program. A working group is actively pursuing this issue.

Under the present definition in DAR Supplement 6, a contractor may be identified as an "actual manufacturer" in the breakout screening process if it has design control even though production is contracted out.

Question. Please put in the record at this point DoD spare parts competition statistics by Service and fiscal year since 1980.

Answer. Spare Parts competition statistics (percent dollars) as reported by the DoD components for Fiscal Year 1985 are as follows:

	Percent
Army	48
Navy	33.8
Air Force	(1)
DLA	71.8

	Percent
Marine Corps	40

[1] Not maintained.

We have no data for prior years.

DFAIR STUDY

Question. Briefly discuss, for the Committee, the major conclusions of the study (DFAIR) and what actions are being taken or contemplated at this time?

Answer. The Defense Financial and Investment Review (DFAIR) was chartered by the Deputy Secretary of Defense in December 1983, to look into the relationships between DoD's profit and contract financing policies. This project had been prompted by a number of concerns, such as an Air Force Systems Command profit study and recommendations offered by the Grace Commission.

The DFAIR project had a twofold objective. First, the profitability of defense contracting was compared to the profitability of the commercial sector as represented by the durable goods manufacturing industry. This comparison had to take into account the key differences in defense contracting and profits earned by the commercial industry in the open market. There were other differences, such as business cycles, accounting treatment of customer furnished financing, DoD's policy of not allowing contractor interest expense as part of contract costs, mix of capital used to produce a product, and the associated cost of capital. Secondly, DFAIR was tasked to examine areas for reform. This included reforms to both the contracting financing policies and the profit policies.

With regard to the first objective, DFAIR found that defense profits were reasonably well-balanced for the risks taken. Defense returns were higher than commercial returns for recent years, but the major reason is that commercial returns reflected a period of recession (1980–1983) that did not affect defense contracts to a similar degree. With regard to the second objective, DFAIR proposed several important reforms for better integrating profit and contract financing policies and make them more responsive to changes in the economic environment. A complete overhaul of the way contracting officers determine negotiation objectives for profit was also recommended.

DoD has delayed taking action on the DFAIR report for almost a full year while awaiting results on a request to the Packard Commission to review the report. It now appears that the Commission will not comment on DFAIR. Similarly, hearings before the Subcommittee on Defense Acquisition Policy, Senate Committee on Armed Services, had been scheduled for September 1985, but they were eventually cancelled. The Department believes it is essential that action be taken on implementing the reforms recommended by DFAIR. This includes rescinding the existing profit policy under Defense Acquisition Circular 76–23 and replacing it with a more balanced policy. To that end, we are presently in the process of assessing the reform areas and developing a plan of action

Question. Your documents state that there has been an "unintended increase" of .5 to 1 percent. What base was used—1 percent of what amount?

Answer. The unintended increase in profit objectives of .5 to 1.0 percentage points covered the three-year period 1981–1983. The amounts were based on those contracts which employed the Weighted Guidelines Method of establishing negotiation objectives for profit and reported those results on a DD Form 1499, "Report of Individual Contract Profit Plan." The DD Form 1499 is DoD's management information system for reporting profit objectives and is required under DoD's regulation on all contracts using the Weighted Guidelines Method that exceed $500,000. For the period covered in the DFAIR report, the totals were as follows:

[Dollar amounts in billions]

	Cost objectives	Number of actions
1981	$13.4	1,826
1982	24.2	2,369
1983	35.6	2,281

It should be stressed that, although there was an intended increase in profit objectives, this does not mean that profits actually realized by contractors were correspondingly .5% to 1.0% too high. The unintended increase was based on profit objectives; realized profit would depend on the profit level subsequently negotiated as part of the contract price and the actual results of contract performance. Furthermore, there are a number of costs that are not allowed on defense contracts and, therefore, must be absorbed through contractor profit.

Question. What measures are being taken to recoup the overfunding? How much has been recovered to date? Are the contractors charged interest?

Answer. As I stated previously, there is no impact to the Government unless a contractor terminates a pension plan which is in an overfunded status. Based on the actuarial assumptions which are used, particularly the interest the fund will earn, and the actual earnings of the assets in the fund, and overfunded pension plan could even itself out or even become underfunded over time. Our primary concern is contractors with overfunded pension plans terminating their plans to gain access to surplus funds without passing an equitable share of the surplus to the Government.

Three contractors have been identified that have terminated their pension plans and received the plans' surplus funds of over $70 million. In all three cases, the contractors were unwilling to equitably share the surplus credit with the Government.

As an interim measure, the Services are currently either including savings clauses in our contracts to cover pension fund termination recoupments or negotiating advance agreements with contractors establishing a method for equitably sharing pension fund surplus amounts.

Question. What actions have been taken to fully address these issues?

Answer. The interim measures mentioned previously provide a short-term solution to the potential problem. In addition, we are developing changes for the Federal Acquisition Regulation (FAR) which will incorporate our interim measures. Once the FAR changes are implemented, we will have permanent regulatory coverage to address this issue.

OVERFUNDED PENSION PLANS AND INSURANCE RESERVES

Question. Last summer the Defense Contract Administration Service (DCAS) and the Defense Contract Audit Agency (DCAA) notified field staffs to the problem of pension overfunding and recoupments. DCAA cited 11 aerospace contractors with $3.9 billion in pension overfunding at that time.

Explain how the Government funding plans relates to directly or indirectly funding corporate pension funds and insurance reserves.

Answer. Contractor contributions to pension plans and insurance payments are overhead costs which are allocated to all work and included in contract prices paid by a contractor's customers. The total amounts of these costs are based on various assumptions and determined in accordance with Cost Accounting Standards 412, "Composition and Measurement with Cost Accounting Standards 412, "Composition and Measurement of Pension Costs," 413, "Adjustment and Allocation of Pension Costs," and 416, "Accounting for Insurance Costs." All Government contracts include a portion of these overhead costs, and we reimburse the contractor through our contract payments. Neither the fact that we pay a portion of these costs nor the methods used to determine the current amounts we are paying create the pension overfunding problem mentioned by DCAS and DCAA. The overfunding problem discovered by DCAS and DCAA relates to differences between actuarial assumptions used to determine the amount of funds as assets in a pension plan to meet future payment liabilities of the plan, and the changes in economic conditions which effect the actual value of the pension plan assets.

Question. How was the overfunding first detected?

Answer. DCAS and DCAA monitor these costs as part of their normal contract administration duties. They discovered the potential problem through their own reviews, through discussions with contractors, and through articles and available financial data which specifically address the area of pension fund accounting.

Question. What is the magnitude of pension overfunding and contractor-held insurance reserves?

Answer. Contractor-held insurance reserves were not identified as a potential problem last summer by DCAS and DCAA. The pension overfunding issue is only a potential problem. There is no impact to the Government unless contractors terminate their pension plans. If the value of the assets in the plan exceed the future value of payments required by the plan, the pension plan is overfunded. Contractors with overfunded pension plans may terminate their plans to gain access to surplus funds without passing an equitable share of the surplus to the Government, even though we participated in providing amounts under our contracts which went into the pension fund. Based on actuarial assumptions which determine the value of pension fund assets and liabilities assuming that contractor plans will not be terminated, there is currently an overfunded amount of approximately $842 million. If all contractors terminated their plans, the pension fund assets would be evaluated at their current market value which may be higher than the actuarial value. This could result in a surplus in excess of the $842 million.

CONTRACT CLOSE-OUTS

Question. In 1976, the Treasury Department issued new rules to allow defense contractors to use the Completed Contract Method of tax accounting which has enabled defense contractors to defer payment of income taxes. Our investigative staff found that this cost the taxpayer in two ways. First, the taxpayer bears hidden interest costs generated on Treasury borrowings to finance progress payments. Secondly, an increased share of defense tax burden shifts to the individual taxpayer because corporate taxes on defense contract profits are deferred legitimately for many years.

Our investigative staff found one F-111 contract with a face value of $2.6 billion has not been closed out since 1965. Why has this contract remained open?

Answer. According to the Air Force, there are two contracts for F-111's, both awarded during the 1960s, that are physically complete but remain open as of this date. One contract (AF33(657)(8260)) was valued at $1.6 billion; the other contract (AF33(657)(13403)) was valued at $5.1 billion. Both have remained open because of a defective pricing case which as been pursued against a subcontractor. The issue was settled in April 1986, and these contracts are expected to be closed-out by July 1986.

Question. Considering the advantages of completed contract method of accounting, how much interest would be earned on deferred taxes to date (on the F-111 contract)?

Answer. The Air Force advises that the contractor was not eligible to use the completed contract method on these contracts because they had been substantially completed at the time that method was authorized for tax purposes. Thus, there were no tax deferrals upon which interest earnings could be computed.

Question. Does the Department have any time limitation on contract close-out, and if not, explain why a limitation has not been established?

Answer. Yes, standard times have been set within DoD's Armed Services Procurement Supplement No. 2 for contract close-out after physical completion. They are as follows:

	Months
Fixed Price Unilateral Purchase Orders	3
Firmed Fixed Price Contracts	6
Contract Requiring Settlement of Overhead Rates	36
All Other	20

Question. Why can't a year to two year limitation be established after delivery and acceptance of a production lot?

Answer. As indicated earlier, there are standards. An absolute limitation is impractical because of the variety of factors which could affect contract close-out. For example, on cost type contracts requiring settlement of overhead rates there is no direct relationship between product deliveries under a specific contract and the plant-wide nature of contractor overhead rates which are developed on a year-to year basis. The contractor cannot submit a claim for overhead until the accounting year has been completed. Once this happens, the next step is a very extensive review of the contractor's claim by the Defense Contract Audit Agency and the year's overhead rates are settled through negotiation by the parties involved. Only then can contracts which are completed during that year be closed-out. If there is a major dispute between the contractor and Government, the ensuing litigation processes can create a significant backlog in unsettled overhead that could span several years.

Question. What is the dollar value, by fiscal year, DoD-wide, of physically completed but not closed-out contracts over $10 million, at the end of FY 1985?

Answer. DoD does not maintain a management information system for tracking contract close-out actions. The Military Services/Agencies track this information to varying degrees. Although we are unable to satisfy this specific request for information, we were able to obtain the following:

Army does not track close-out actions.

Navy (as of December 31, 1985): 4,504 contracts physically completed but remain open; $41 billion total contract value; 1.8 billion still owed the contractor.

Air Force (as of March 29, 1986): 3,281 contracts physically completed by remain open; $18.2 billion total contract value; $163.8 million still owed the contractor.

93,000 contracts physically completed but remain open.

Defense Logistics Agency (as of March 31, 1986):

LOGISTICS ADP MODERNIZATION

Question. What directives has your office issued to the military services for coordinated system development of logistics ADP modernization initiatives?

Answer. There is a network of existing and "in process" directives and instructions in the Defense Department logistics system which require the use of standard codes, formats, interface procedures and protocols, and system development controls. These directives and instructions define the parameters within which logistics modernization initiatives at the Department of Defense, military service, or defense agency levels can occur. Because there are three basic influences on ADP system design—functional influences, technical influences, and communications requirements—each of which is managed by a different Assistant Secretary, my office does not issue all of the Directives and Instructions which are involved in assuring coordinated ADP system development. My office issues the directives and instructions establishing functional requirements.

Some representative examples, issued by my office, which fall into this category are: Department of Defense Directive 4000.25 which established and governs the management of the fourteen Defense Logistics Standard Systems; Department of Defense Directive 4100.39, which authorizes the Defense Integrated Data System; and the, as yet unnumbered, Department of Defense Instruction establishing defense-wide standards for bar code marking and reading.

Other Directives and Instructions which control the ADP systems development and management process in which my office participates, include: the communications system Directives and Instructions in the 4600 series, controlled by the Assistant Secretary of Defense for Command, Control, Communications and Intelligence, ASD(C3I); the data elements and codes Directives and Instructions in the 5000 series, controlled by the Assistant Secretary of Defense, Comptroller, ASD(C); and the two principal issuances governing the development and management of ADP information systems in the Department of Defense, DoDD 7920.1, Life Cycle Management of Automated Information Systems, and DoDI 7920.2, Major Automated Information Systems Approval Process, which are joint issuances of my office and the offices of the ASD(C) and ASD(C3I).

Question. Please cite specific examples of the Defense-wide initiatives aimed at coordination and improvement of logistics modernization programs and explain how they improve compatibility, accuracy, timeliness and efficiency.

Answer. Specific Defense-wide initiatives in the logistics area which are currently in progress include: Modernization of the Defense Logistics Standard Systems (MODELS) project, the Logistics Applications of Automated Marking and Reading Symbols (LOGMARS) project, the Computer Aided Logistics Support (CALS) project, the Electronic Data Interchange (EDI) project, and the Secondary Item Weapon System Management Program (SIWSMP). The MODELS project is a complete redesign of all of the existing Defense Logistics Standard Systems. The current standard systems are based on the technology of the late 1950s and early 1960s. Although the standard systems have been the backbone of the logistics process for over twenty years, system saturation and the need for greater flexibility, combined with the technology revolution in data processing, created the need for the MODELS project. LOGMARS is the Defense Department's standard for bar coding and reading. Since its initiation, the LOGMARS technology has been incorporated in a variety of logistics applications ranging from shipping and transportation documents to laser-etched bar codes on small arms for serial number control. LOGMARS allows the elimination of one element of human intervention in the logistics process; increased accuracy of records plus savings in time are the main benefits. CALS is part of the technology revolution in the technical data area and is the logical derivative of major standardization efforts in computer-aided design and manufacturing. The automated interchange of technical data, when fully implemented, will fill a large gap in logistics systems which has caused processing delays and pricing problems in the past. EDI, like CALS, is a project being jointly accomplished with industry. EDI involves the electronic interchange of pricing, ordering and invoicing data thus eliminating a significant amount of human intervention, delays and inaccuracy. The Secondary Item Weapon System Management Concept is an initiative consisting of several basic changes to the way that weapon system items are managed. The principal change is a revision to the primary focus of the logistics process from components to end items, or weapon systems. All of the basic elements of the logistics process will be re-oriented by this effort to focus more intense management on the total readiness of the weapon systems supported than on the percentage of availability of component parts.

Question. Who is the OSD official responsible and accountable for direct control and coordination of these initiatives?

Answer. All of the initiatives I mentioned are being managed by various elements of my staff. I am, therefore, the single individual responsible and accountable for control and coordination of the initiatives.

Question. Are the Services' efforts to modernize their supply and maintenance systems a duplication of effort?

Answer. No. Although all management systems contain some degree of duplication in that they process transactions, make calculations or produce output products, this is not indicative of duplication in an overall sense. The supply and maintenance modernization efforts of the Military Services are designed to meet the unique requirements of the separate military missions. From a logistics systems perspective this means that supply and maintenance systems are tailored to supporting specific needs, e.g., shipboard stockage for Navy materiel, fixed location bases for Air Force, or mobile army combat units. No single system to support the myriad of supply or maintenance requirements of all Services is remotely feasible today or the foreseeable future. Nor is such a system desirable since it would necessarily involve a "least common denominator" approach to meet even the minimum requirements of the vast Defense logistics establishment. The Department does identify and use common system specifications in those areas which are truly common. DoD has developed a single item catalog and 14 Defense Logistics Standard Systems (DLSSs) which encompass most of the common functions and interfaces among the Services. The development of these systems is accomplished through joint Service cooperation and is closely monitored by OSD. OSD officials minimize duplicative effort in the Services' logistics systems modernization programs by continuous oversight of the implementation of these systems through management briefings, site visits and Inspector General/GAO Reports.

Question. How does the above named official make this determination?

Answer. Although many systems are Service-unique, they must be developed consistent with general OSD policy Issuances. This development is watched closely by the OSD staff. In the case of the DLSS systems, OSD closely reviews all proposed revisions to insure duplication is minimized.

Question. Why have you required the Air Force to have a single, integrated logistics ADP modernization program, yet allowed the other Services to budget individual, stand-alone logistics systems?

Answer. The Air Force has not been required to have a "single integrated" logistics ADP modernization program. The Air Force Logistics Management Systems (LMS) Modernization Program is designed to support the Air Force Logistic Command (AFLC). The LMS will support the AFLC core missions, requirements determination, acquisition, storage and distribution, and maintenance by overcoming the serious deficiencies of the existing systems. We have not sought to dictate to the Services that systems should be designed as single or multiple subsystems integrated together. We do exercise oversight and control through the Major Automated Information System Review Council (MAISRC) process. Our emphasis has been to ensure that systems meet mission needs and that sufficient standards and interfaces exist to provide interoperability.

Question. Provide for the record the detailed reviews made on major upgrades each of the following logistics ADP systems by the Assistant Secretary of Defense for Acquisition and Logistics, the date of the review, their estimated life cycle cost, whether they are reviewed by MAISRC/CRC or just delegated to the Services, and the major policy guidance provided by the Assistant Secretary to the affected Service:

Army: Standard Depot System (SDS); Commodity Command Standard System

(CCSS); Integrated Procurement System (IPS).

Navy: Uniform Inventory Control Points (UDAPS-ICP); Stock Point Integrated Communications Environment (SPLICE); Stock Point ADP Replacement (SPAR); Naval Air Logistics Command Management Information System (NALCOMIS); Trident Logistics Systems.

Air Force: Air Force Logistics Command Modernization.

Defense Logistics Agency: DLA Modernization.

Answer. DoD conducts MAISRC reviews of Major Automated Information Systems (AIS) which meet the dollar thresholds of $100M from need through development or $25M in a single year or are of special interest to the Department. While Milestones 0 and I decisions are retained at the OSD level, Milestones II and III may be delegated to the DoD Components provided that planning continues to be comprehensive and sound; an effective solution for the requirement has been selected; the system continues to be developed within established schedules and costs; and the program management structure and acquisition strategy remain sound and stable.

The OSD oversight and review process operates at three levels. The first level involves the review of DoD Component Acquisition and Logistics systems modernization actions. The MAISRC is the principal process employed at this level; however, other non-MAISRC systems are also reviewed largely on the basis of perceived problems and deficiences. For small to medium scale (low dollar threshold) logistics systems modernization efforts, we intend to review logistics modernization plans being developed by the Defense Components. The second level involves joint DoD projects to improve Acquisition and Logistics systems. Computer Aided Logistics Support (CALS), Modernization of the Defense Logistics Standard System (MODELS), and Weapons Systems Management (WSM) are examples of such efforts. At the third level, we are now taking a broader perspective which looks across the systems being reviewed at level I and the Defense-wide projects being conducted at level II. The objective is to establish a strategic Acquisition and Logistics Information Systems plan to ensure that systems modernization proceeds on a coherent, coordinated and prioritized basis. This plan will focus on meeting the long range needs for more efficient, effective and productive acquisition and logistics support.

The following information is provided on the major upgrades:

System	LCC (millions)	Type review	Date
Army:			
Standard Depot System (SDS)	(1)	Delegated	
Commodity Command Standard System (CCSS)	(1)	MAISRC	TBD
Integrated Procurement System (IPS)	(1)	Delegated	
Navy:			
Uniform Inventory Control Points (UDAP-ICP)	$550	do	
Stock Point Integrated Communications Environment (SPLICE)	$171	do	
Stock Point ADP Replacement (SPAR)	$1,500	MAISRC	TBD
Naval Air Logistics Command Mgmt Information System (NALCOMIS)	568	MAISRC	Jun 86
Trident Logistics System	(1)	Delegated	
Air Force: Air Force Logistics Command Modernization	$1,700	MAISRC	Feb 86
Defense Logistics Agency: DLA Modernization	(1)	MAISRC	3R Qtr 86

(1) Not Available.

There is a network of existing and "in-process" directives and instructions in the Defense Department logistics system which require the use of standard codes, formats, interface procedures, and systems development procedures. These directives and instructions define the parameters within which logistics modernization initiatives at the DoD, Military Services, and Defense Agencies can occur. Some representative examples from the extensive list of directives and instructions which fall into this category are: DoD Directive 4000.25 which established and governs the management of the fourteen Defense Logistics Standard Systems; DoD Instruction 5000.12 which governs data elements and data code standardization procedures; and the as yet unnumbered DoD instruction establishing defense-wide standards for bar code marking and reading.

TECHNICAL DATA/AUTOMATED LOGISTICS SYSTEMS

Question. In its report last year, the Committee expressed its concerns that DoD technical documentation efforts lack OSD oversight and may result in systems that are incompatible and costly. The Committee directed:

A. DoD to develop common electronic publishing standards and specifications for all Services;

B. DoD to develop a plan for compatible, totally automated digital electronic systems for use within the Defense Department and for the goal of reducing the use of paper as a technical documentation medium to 50 percent by the Service.

DoD recently submitted a very responsive report to the Committee to address these issues.

Dr. Wade, as Assistant Secretary of Defense for Acquisition and Logistics, would you be the DoD official accountable for DoD's success in achieving these objectives?

Answer. Yes, the Assistant Secretary for Acquisition and Logistics is accountable for DoD's success in this area.

Question. When will DoD achieve these goals?

Answer. The actions planned to achieve these goals are summarized in DoD's report to the Committee of 28 March 1986, entitled "Automated Logistic Systems". The actions on common electronic publishing standards include the adoption of interim standards for text and engineering drawings, and a longer term program to develop comprehensive standards and validation approaches with support from the National Bureau of Standards. The interim standards are being incorporated in a limited coordination Military Standard on "Automated Interchange of Technical Information", to be available in the third quarter of 1986 for use by all Military Departments and Agencies. This Military Standard will be fully coordinated throughout DoD during 1986 to ensure that all user requirements have been canvassed and considered. Longer term standards and validation approaches will be demonstrated and adopted incrementally in the 1987-1992 timeframe.

Actions to reduce the use of paper as a technical documentation medium have already begun in programs such as the Army's Integrated Publishing and Printing Service (AIPPS/600S) and the Air Force Automated Technical Order System (ATOS). These programs will accept digital input of information, and print paper output when demanded, starting in 1987. A goal of 50% reduction in paper distribution appears achievable through distribution of digital data to selected user environments, but paper copy will still be required at the end user's site. Hardware and software technologies for paperless display of technical documentation in a field environment are now being explored in several development and demonstration projects, which are coordinated under the Computer Aided Logistics Support (CALS) program. An operational capability for "near paperless" maintenance manuals is expected by 1992.

COMPUTER AIDED LOGISTICS PROGRAM (CALS)

Question. The Committee understands that the Computer Aided Logistics Program (CALS) initiative will "acquire, process, and use logistic technical information in digital form . . . for new major weapon systems entering production in 1990 and beyond."

Which new weapon systems are expected to be-entering production in 1990?

Answer. The following systems will enter production in the early 1990's, and are candidates for implementation of the CALS approaches for acquiring and using digital technical information:

Army:

AH-64 Product Improvement	1991
LHX Helicopter	1993
AAWS-M Antitank Weapon	1992
MLRS SADARM	1990
TACMS Tactical Missile System	1992
AFTADS Field Artillery Tactical Data System	1990
LADS Light Air Defense System	1991
NATO IFF (Mark XV)	1992
MW SCARECROW Airborne Jammer	1990
NBC Reconnaissance Vehicle	1990
M9 ACE Armored Combat Earthmover	1992
Heavy Assault Bridge	1991
Combat Logistics Vehicle	1990
Tactical Electrical Power	1991
TMDE Electro-optics Tester	1990

HF SNAP Combat Net Radio	1991
PGLS Precision Gunnery Laser	1990
Navy:	
V-22 (JVX) Osprey	1990
EA-6B	1990
AOE-7	1990
Consolidated Automated Support System	1990
DDG-51 Combat System	1990
F-14D III	1990
SSN-21	1990
P-3 Avionics	1991
E-2C Update Group II	1992
Standard Missile Improvement	1992
Air Force:	
C-12F Aircraft	1990
C-21A Aircraft	1990
TTB Trainer	1990
JSTARS	1990
Small ICBM	1990
SRAM II	1990
Tactical Drone	1990
MILSTAR	1990
Defense Reconnaissance Support	1990

Question. Will CALS be prototyped on the SSN-21 submarine, V-22 (JVX) helicopter and the Air Force Advanced Tactical Fighter systems?

Why are there no Army programs?

Why not C-17 or Navy advanced tactical aircraft?

Answer. First of all, we must clarify that CALS is an integration program, not a system. "Prototyping" of CALS will consist of designating lead weapon systems in each Service that will be used as test beds for integration of various separate automated logistic information systems, demonstration of the functional utility of digital information, and development and validation of CALS interface standards. SSN-21 and V-22 have been designated as lead weapon systems in the Navy. The Army and Air Force will designate lead weapon systems later this year. In parallel with the lead weapon system programs, the acquisition of data in digital form will be pursued in other weapon system contracts wherever it is cost effective. CALS standards will be implemented as they become available. For example, the Air Force plans to acquire technical orders and engineering drawings in digital form in the C-17 program. The Advanced Tactical Fighter is a prime candidate for implementation of the CALS standards and architectural guidelines that result from lead weapon system demonstrations.

Question. Why are the Services conducting separate CALS demonstration projects, and how will this foster standardization?

Answer. Each of the automated capabilities to be integrated under CALS requires demonstration in a user environment. These environments vary considerably from one Service to another (e.g. tanks, ships, aircraft). Further, the hardware and software systems being addressed by CALS are different in each Service and throughout the industrial base. The CALS approach allows each Service and industry to determine which hardware, software and implementation procedures best fit their application needs, but requires that common DoD CALS interface standards and architectural guidelines be followed to ensure compatibility. Separate demonstrations will exercise the same interim CALS standards over a wide range of interfaces and user environments. This will support overall DoD standardization by ensuring that the final CALS standards and architecture are broad enough to accommodate all DoD user needs and can therefore be adopted uniformly by all Services.

Question. By 1995, how many systems do you think will benefit from CALS technology?

Answer. By 1995, virtually all of DoD's new weapon system acquisition programs and the spares procurement program will benefit greatly from the technologies being integrated by CALS. The technologies and standards will be adopted incrementally as they become available between now and 1992. The greatest extent of CALS implementation will be in contracts for new weapon systems which are finalized after CALS standards and architectural guidelines have been demonstrated. It is not expected to be ecomonically feasible to completely convert systems in production before 1990 to the CALS standards and architectures used for new systems. However, substantial benefits will still be realized for these older systems by using scanning technologies to convert paper engineering drawings and other documents into a digital form compatible with the automated repositories and publishing and distribution capabilities of the 1990's.

Question. By what time do you think all DoD weapon systems will be acquired under the CALS concept for technical data?

Answer. Demonstration of CALS standards and architectures for integration will be completed incrementally between now and 1992, by which time all new major weapon systems will be expected to acquire technical and logistic data under the CALS concept.

Question. Your report indicates that CALS is not fully funded by the Services. Has that been resolved in DoD internal budgets for fiscal year 1988?

Answer. The Services are seeking to resolve these issues in internal FY 1988 program and budget reviews. CALS is being given high priority. The final disposition will be reflected in the FY 1988 President's Budget.

Question. How much will CALS cost? What will be the Government's total investment in this technology, and what will be the payback?

Answer. The real question here should be "What will be the cost of transition from current paper-intensive logistic processes to a largely automated mode of operation?". There are two parts to the answer, one regarding investment in automation, and the other regarding CALS integration. Hundreds of millions of dollars are budgeted for modernization of logistics technical information systems in the Services and DLA, and parallel modernization is ongoing in the industrial base. Each of these stand-alone modernization projects is justified on the basis of lower life cycle costs or other benefits, such as improved timeliness and accuracy of data, compared to continuing with current systems. Many contractors are claiming financial paybacks of 2:1 for investments in automated technologies—similar benefits are projected for government automation. The initial contribution of CALS will be to integrate these "islands of automation". The total investment in developing and implementing interface standards and architectures for integration has not yet been determined, but will be an order of magnitude smaller than the cost of modernization. The payback for CALS integration is at present difficult to quantify, but informed engineering judgement (as reported by the DoD-Industry Task Force on CALS, 1985) is that the CALS approach to standardization of interfaces is the most highly leveraged step that DoD can take to realize the full benefit of the new automated techologies.

Question. Describe the OSD oversight that will be applied to this initiative.

Answer. The mechanisms for OSD oversight are the CALS Steering Group and the OSD CALS office. The Steering Group has senior representatives for each Service and Agency, and is chaired by the Director, Weapon Support Improvement, who reports directly to the ASD(A&L). The Steering Group is responsible for overall coordination of CALS implementation, and for approving the Service and Agency CALS Implementation Plans. The Steering Group has established working groups on standards and communications requirements. The Steering Group regularly receives progress reports from, and issues guidance to, the Services, DLA, and the CALS working groups. The OSD CALS office, also under the direction of the Director, Weapons Support Improvement, is responsible for coordinating the development of CALS data interchange standards and architectural guidelines, managing the OSD funding element that support CALS standards development and demonstration, reviewing Service plans and funding for CALS, and providing an interface with industry. The OSD CALS office interacts on a daily basis with counterpart organizations in the Services and DLA. Major support is provided by the National Bureau of Standards to assist the CALS Steering Group and OSD CALS office in assuring that CALS implementation programs are compatible and comply with the CALS standards and guidelines.

Question. How will you coordinate the development and prevent proliferation of different systems and technologies in each of the Services?

Answer. The principal issue at this early stage of integrating automated technologies is compatibility rather than proliferation. DoD will coordinate the development of systems through the CALS Steering Group, and will ensure compatibility of different systems by imposing interface standards. The Service and Agency CALS implementation plans will be available by 1 July, and will be reviewed for compatibility by the CALS Steering Group, with assistance from the OSD CALS office and the National Bureau of Standards. The establishment of the OSD CALS office this year provides a capability for continued in depth review of the CALS implementation plans and for advising the CALS Steering Group on steps needed to ensure that systems are compatible and there is no unnecessary redundancy.

Question. What organization is responsible for making CALS a reality?

Answer. Ultimately, the Assistant Secretary of Defense (Acquisition and Logistics) is responsible. On a day to day basis, however, the OSD CALS office and counterpart organizations in the Services and Defense Logistics Agency are responsible for seeing that CALS integration is accomplished, standards are adopted, and the CALS program objectives become a reality. Overall coordination and policy direction is provided by the senior CALS Steering Group. The Committee should bear in mind that CALS is an integration initiative—the individual modernization programs that are coordinated under CALS will be managed by appropriate Service and agency acquisition offices.

Question. What powers will this organization have to either review budgets or approve program decisions?

Answer. The CALS Steering Group will approve the Service and Agency implementation plans. Program decisions will be made at the lowest appropriate organizational level, but will be in accordance with the approved plans. The OSD CALS office will review Service and Agency budgets as part of the Planning, Programming and Budgeting System (PPBS). The OSD CALS office will also directly manage the OSD CALS program element (PE 63736D), which includes National Bureau of Standards CALS support and some high leverage development and demonstration projects. The CALS Steering Group has the necessary management authority to ensure conformance of CALS plans to DoD guidelines, and will act when necessary based on recommendations from its working groups, the OSD CALS office and the National Bureau of Standards.

Question. How much will be invested in CALS before OSD establishes mandatory standards for these systems?

Answer. A quantitative estimate is not available. As explaned above, CALS is an integration initiative being imposed on a modernization process which has already begun. This first order of business has been to adopt interim standards for engineering graphics and for text, to be imposed on two of the major elements of DoD's modernization programs: automated engineering drawing repository systems, and automated technical manual systems. These systems are being installed at a relatively few sites in DoD, and it is not envisioned that the interface standards will require significant changes in the hardware because hardware independence is the primary goal of the standards. DoD has not yet reached the decision point for the larger investments needed to implement "near paperless" capability at a wide range of user sites. For example, to equip each Air Force base with devices for presenting information to maintenance technicians would be an order of magnitude more expensive than the current step of automating depot level technical information. These downstream investments will be made with full benefit of the planned CALS standards, which will be implemented incrementally between now and 1992.

Question. How can OSD assure standardization if it allows the Services to heavily invest in this technology prior to creating DoD wide standards?

Answer. The problem of standards needing to catch up with technology is not unique to CALS, but CALS may have a unique advantage. The focus of CALS standardization is on interfaces rather than the hardware and software systems themselves. Therefore, the risk of proceeding with moderization programs now underway is considered acceptable. At the same time, standards development is being accelerated. Standards will be applied as they become available, both to new systems and retroactively where it makes sense. The Service and Agency CALS implementation plans are being thoroughly reviewed for duplication, conflict and compatibility with DoD CALS guidelines and interim standards. This review is being conducted by the OSD CALS office and the National Bureau of Standards. The results will be presented to the CALS Steering Group, at which time any problems will be resolved. The OSD CALS office will follow through with each Service and DLA in monitoring the execution of the plan and coordinating modifications.

Question. Why would OSD fail to require a lead-Service approach for CALS to develop standards and conduct all demonstrations of new technology, rather that funding multiple projects before standards are developed?

Answer. It is anticipated that a lead Service approach will be taken in some technology demonstrations (to be determined), but these will be limited to cases where a single technical solution is likely to meet the unique requirements of user environments of each Service. Regarding the CALS standards themselves, separate demonstrations in each Service are viewed as necessary steps to exercise the proposed standards and architectures over a full range of applications before they are adopted. An equally important consideration is that, in an era of rapidly evolving technology, DoD must be careful not to freeze out new ideas and approaches to solving similar problems. The CALS Steering Group and the OSD CALS office have been created to play a forceful coordinating role in ensuring that unnecessary duplication of effort does not occur.

Question. Will all CALS initiatives be clearly indicated in the ADP budgets submitted to Congress, and identified in a single location?

Answer. No. If the Committee desires, the ADP modernization programs that are being coordinated under CALS can be identified in a separate report after submission of the ADP budget—these programs were identified in the CALS report forwarded to the Committee March 28, 1986. However, ADP modernization budgets do not include the funding for CALS integration, standards development and demonstrations (which are separately identifiable in OSD and Service budgets) or for CALS implementation in weapon system acquisitions (which, in the future, will be inherent in the weapon system budgets).

Question. What fiscal year 1987 funding, by Service, is being requested for CALS?

Answer. The FY 1987 budget was largely finalized by the time of the Depulty Secretary's 24 September 1985 memorandum initiating CALS. Therefore the only specific CALS request included in the budget is for $14.8 million of RDT&E funds for the OSD-managed program element (PE 63736D). This funding is vital to getting an early start on CALS integration and standards development, and includes support of National Bureau of Standards CALS efforts. FY 1987 funding for ongoing Service and Agency efforts now being coordinated under CALS is identified in the 28 March 1986 report to the Committee on "Automated Logistics Systems". Additional Service FY 1987 funding to implement CALS will be addressed in internal DoD reprogramming actions.

Question. If Service CALS implementation plans are not complete, and won't be ready until late in 1986, what assurance does the Committee have that DoD will review and approve CALS projects before the funds are spent?

Answer. CALS is an integration initiative that is being imposed on a modernization process that has already started. Investments made in FY 1987 and beyond will be in accordance with the approved CALS implementation plans, but this does not mean that prior year investments are incompatible with CALS objectives. Since the focus of CALS standardization efforts is on interfaces rather than hardware, there will be ample opportunities to apply CALS standards to ongoing moderizations as well as new procurements. First priority has gone to defining interim standards for use by two of the major categories of ongoing moderization programs: automated engineering drawing repositories and automated technical manual systems.

Question. Provide for the record a list of the CALS projects, in priority order, that are critical to solving immediate paperwork problems.

Answer. Priorities are being reviewed as the Services and Defense Logistic Agency finalize their CALS implementation plans. A list of critical programs follows:

Army: CALS/Technical Information Management System (CALS/TIMS); Digital Storage and Retrieval Engineering Data System (DSREDS); Army Integrated Publishing and Printing Service (AIPPS/600-S); Automated Publications Production System (APPS); Electronic Maintenance Publications System (EMPS); Militarized/Miniaturized Electronic Information Delivery System (MEIDS); Personal Electronic Aid for Maintenance (PEAM); Job Performance Aid Production System (JPAPS).

Navy: Ship CAD/CAM; Aviation CAD/CAM; Graphics Engineering and Mapping Systems (GEMS); Engineering Data Management Information and Control System (EDMICS); Navy Automated Publishing System (NAPS); Navy Technical Information Presentation System (NTIPS); Navy Print on Demand System (NPODS); Navy Standard Technical Information System (NSTIS).

Air Force: Automated Technical Order System (ATOS); Engineering Data Computer-Assisted Retrieval System (EDCARS); Automated Technical Information (ATI) Demonstration Projects; Integrated Design Support System (IDS); Integrated Maintenance Information System (IMIS); Unified Data Base for Acquisition Logistics (UDB).

Defense Logistic Agency: Computer Aided Data Exchange Standards/Specifications (CADESS); Engineering Drawing Automated Storage/Retrieval Equipment (EDASRE); Intelligent Gateway Systems (DGIS/LDG); Modernized Parts Control Automated Support System (MPCASS); Transportation Management System (TRAMS).

Question. Provide for the record on a project basis, the source of funds for each CALS project (see page II-10 of CALS report), the development status and purpose of each CALS project, and additional requirements that were unfunded when the fiscal year 1987 budget was submitted to Congress.

Answer. The list of CALS projects in the 28 March 1986 report to the Committee was based on drafts of the rapidly evolving Service CALS implementation plans. The draft plans are being revised, including the list of CALS projects, and unfunded FY 1987 requirements are being reviewed within the Services. Final plans will be available in July 1986. An updated list, including the information requested above, will be available at that time.

Question. Please place your recent report to the Committee on CALS and automation of technical manuals into the record at this point.

[CLERK'S NOTE.—The Department's report will be printed at the end of this hearing volume. See page 757.]

TECHNICAL DATA REPOSITORIES

Question. The Defense Department recently submitted a very responsive report to the Committee on its efforts to automate technical data and manuals and to evolve to automated logistics systems in the 1990s.

Dr. Wade, why have you allowed each Service to develop its own ADP system for automation of technical data repositories?

Army: Digital Storage and Retrieval Engineering and Data System (DSREDS).

Air Force: Engineering Drawing Automated Storage and Retrieval System (EDCARS).

DLA: Engineering Drawing Automated Storage and Retrieval System (EDASRE).

Navy: Engineering Drawing Management Information and Control System (EDMICS).

Answer. These systems are not totally independent efforts. The Army and Air Force recognized common requirements and jointly developed a technical specification and procurement package that is currently under contract for the DSREDS and EDCARS repository systems.

The technical specification and plans for the DSREDS/EDCARS program were distributed to the Navy and DLA, but the balance of workloads in their repositories were different, and did not fully exercise the technical strength of the optical disk (near real-time random access and display of stored drawings). The Navy and DLA repositories are heavily oriented to the mass production of technical data packages to support competitive reprocurement of spare parts. Interim systems suited to these requirements are being pursued by the Navy and DLA. The DSREDS/EDCARS approach is being evaluated by the Navy and DLA for their planned digital storage enhancement.

The Office of the Secretary of Defense, recognizing the different Service requirements and the rapid change in technology, has not directed the adoption of a single system of hardware or software. The policy instead has been to assure that interface standards are developed that will allow the transparent exchange of information between the repositories and Industry regardless of the mechanism of storage. This policy provides flexibility in satisfying user needs at the lowest cost and technical risk and enhances competition. To support rapid access to engineering data, a DoD-wide index/locator system is being developed. This system, called the Military Engineering Data Asset Locator System (MEDALS), will be located at the Defense Logistics Services Center, and will be operational by October 1989.

Question. What efforts have been made to either coordinate the development of these systems, or at least to share "lessons-learned" data between the Services?

Answer: Since 1982 the Services with OSD participation have maintained a working relationship to assure an interchange of lessons learned, resolution of common problems and informal coordination of specification requirements. The Army and Air Force have formalized this relationship in the joint DSREDS/EDCARS program which is being closely monitored by the Navy and DLA.

In 1985, OSD initiated the Computer Aided Logistic Support (CALS) effort to integrate DoD plans for acquiring, storing and distributing technical information in digitized form. A key element of CALS will be the adoption of common data interchange standards to ensure compatibility of Service systems and a unified DoD interface with Industry.

The senior DoD official responsible for oversight of the technical data repository systems is the Director, Standardization and Data Management, Mr. Peter Yurcisin, located in the Office of the Deputy Assistant Secretary of Defense (Production Support).

Question. The Committee understands that the Army and Air Force are in fact sharing the same contract. Why are you allowing Navy and DLA to pursue separate initiatives?

Answer: There has been considerable coordination by the DSREDS/EDCARS program with the Navy and DLA regarding the DSREDS/EDCARS efforts. Navy has been provided copies of the RFP and the contract (including the technical specifications), and they have had observers at various contractor demonstrations and meetings. Both the Navy and DLA were briefed about the DSREDS/EDCARS program before the RFP was released, but their needs for on-line access for engineering data are less immediate than those of the Army and Air Force.

The Navy and DLA have continued their close coordination and at the present time are evaluating a joint procurement for enhancing current repository automation. This evolution includes review and possible use of the DSREDS/EDCARS technical specification as the basis for development of a joint procurement requirement for digital storage. The Navy and DLA will assess lessons learned from DSREDS/EDCARS and the subsequent development of new technologies to assure that their requirements are structured in the most cost-effective way.

Question: The Committee understands we have the same problem with ADP systems for technical manuals and orders. Why have you allowed proliferation of separate and redundant systems?

Answer: The near term technical manual automation projects include the Army Integrated Publishing and Printing Service (AIPPS/600S), and the Air Force Automated Technical Order System (ATOS). These systems embody different acquisition approaches designed to meet the highest priority needs of each Service. The Navy has no current near term technical manual automation program.

The Army approach (AIPPS) is to use contractor supplied hardware/software installed at Army sites for automated preparation and printing of technical manuals and other documents. The AIPPS contract does not buy or lease equipment, but rather procures a service. It is therefore not considered an "ADP system" in the context of DoD acquisition procedures.

The Air Force (ATOS) prepares, updates, and distributes technical manuals at the depot level. ATOS is being acquired in accordance with ADP acquisition procedures.

In addition to these near term efforts, each Service has projects planned or underway to demonstrate the technologies required for future capability. The future capability will involve automated authoring systems that are integrated with contractor design and logistic data bases, electronic delivery and distribution systems, new formats for electronic display, and a mix of print on demand capabilities and paperless presentation of information to end users in the field. These development efforts are now being coordinated under the DoD Computer Aided Logistic Support (CALS) initiative as described in the 28 March report to the Committee.

It should be noted that none of the Services has a program to cover the complete spectrum of technical manual automation from initial preparation through presentation to the end user. Each Service has several pieces of the problem covered, in some cases with differing technical approaches. This is to be expected in such a relatively new area with rapidly evolving technology. These developing systems will be closely monitored, and the best technical approaches will be selected for long term DoD use. The key question at this juncture may be one of compatibility among systems rather than commonality. The CALS program will ensure that common data interchange standards are adopted for all the technical manual automation programs to ensure compatibility.

The senior DoD official responsible for oversight of automated technical manual systems is the Director, Standardization and Data Management, Mr. Pete Yurcisin, located in the Office of the Deputy Assistant Secretary of Defense (Production Support). He is a member of the CALS Steering Group, and oversees the execution of CALS coordination efforts regarding technical manual systems.

The principal issues in managing automated technical manual systems at these early stages are not duplication and proliferation. The differences in Service approaches stem from different starting dates in a rapidly changing technical environment, different Service practices relative to contractor support, and different priorities in functions to be automated. The DoD approach at present is not to standardize the systems, but rather to standardize the system interfaces. DoD interface standards for technical manual systems are now being reviewed by industry associations and are expected to be in initial use by 1987. This standardization approach has the inherent advantage of allowing each Service to tailor its automation to meet specific user needs, of maintaining competition, and of allowing rapid incorporation of technological advances. The cost to DoD of initially having three spearate systems is low. An evaluation in the 1987-1988 timeframe will provide experience data on the advantages and disadvantages of various technical manual automation approaches.

STANDARDS FOR LOGISTICS ADP SYSTEMS

Question. Last year the Committee directed the Assistant Secretary of Defense for Acquisition and Logistics to take the lead policy role for ensuring maximum coordination and compatibility among logistics systems by developing and promulgating minimum standards to achieve this goal. There are at least 10 major logistics ADP system upgrades currently underway at an estimated life cycle cost exceeding $6.5 billion which will be the Department's backbone systems well into the next century. Congress has been appropriating funds for these system upgrades for many years.

Dr. Wade, why has OSD leadership waited so long to get involved in establishing minimum compatibility standards for DOD ADP logistics systems?

Answer. OSD has been pursuing compatibility for DOD ADP logistics systems for more than 25 years. Data standards, common procedures, interface standards, DOD networks (AUTODIN and DDN), control data banks and automated transaction routing capabilities are being used to improve the quality and timeliness of data collection and interchange throughout the DOD. Such recent projects as Computer Aided Logistics Support, Modernization of the Defense Logistics Standard Systems (MODELS) and our study to identify additional standards that will be needed represent our determination to ensure that we extend and improve the use of automation within DOD in ways which improve compatibility, productivity and mission performance.

Question. The Department's report to Congress on management of general purpose ADP resources states that your office, Dr. Wade, has "begun a study of ongoing initiatives with the goal of identifying new policies and standards that will be needed to meet the Congressional guidance . . . to be completed during the latter part 1986. The next step will be to further refine plans for integration of these standards efforts and possible new standards so that interoperability can be achieved as early as possible."

Why is a study needed?

Answer. This study focuses on providing needed ADP and telecommunications standards to facilitate the moderization and interoperability of automated acquisition and logistics information systems. The study recongizes and will not duplicate the extensive work already being done in the standards area but will identify what is needed to speed the development, approval and implementation processes. Speeding these processes will enable earlier consideration of the standards, reduce dependence on extensive retrofit and temporary bridging of systems and improve the efficiency and effectiveness of systems interoperability.

Question. How soon will DOD logistics systems benefit from OSD guidance on standards?

Answer. As indicated above, standards programs are continuing and extensive efforts within DOD. They are considered essential for effective systems performance and their benefits have been realized for sometime. The Defense Data Network (DDN) with its associated protocols is an example of a program well into implementation. Computer Aided Logistics Support (CALS) is a program in the earlier stages of development which is fostering a wide range of standards to facilitate the exchange of technical data.

Question. How much will it cost to retrofit ADP systems that have been under development for many years once OSD finally acts?

Answer. Because the study is in its early stages, neither required standards nor the impacts of retrofitting such standards are known at this time. Be assured that we will not standardize for the sake of standardization but to achieve improvements in mission performance and productivity

Question. Why after years of investing in these critically needed systems does it take the specific interest of and direction from a Congressional Committee to get action?

Answer. We appreciate the Committee's interest in interoperability and its support for our continuing efforts in this area. Our commitment to improve communications among acquisition and logistics information systems is long standing and not dependent upon Committee direction.

Question. Dr. Wade, do you have a single, integrated office in your organization to oversee the development of logistics ADP systems and to promulgate standards?

Answer. The Directorate for Acquisition and Logistics Information Systems (A&LIS) is responsible for overseeing the quality and performance of A&L systems including the development of logistics ADP systems and the promulgation of required standards.

Question. Explain your organizational arrangement for the record?

Answer. Organizationally, this directorate reports to the Deputy Assistant Secretary of Defense for Programs and Resources which is responsible for A&L programs planning, evaluation and integration. The Director for A&LIS is the ASD (A&L) focal point for all ADP matters, including MAISRC reviews of A&L related systems, ADP plans and programs which cut across systems. The Directorate is the principal point of contact with the Offices of the Assistant Secretaries of Defense (Comptroller) and C3I and coordinates on all programs and policy matters. This office also works closely and directly with A&L functional managers who assess mission needs and functional requirements as part of A&L's overall evaluation of the requirements and capabilities of automated information systems.

Question. Describe in detail the specific ADP qualifications of the personnel assigned to this organization?

Answer. Currently, the Office includes a director and three professionals (2 civilian and 1 military) and is being increased to provide additional planning and oversight capability. Personnel qualifications encompass extensive training and experience at all levels in every aspect of an automated system's life cycle from Mission Element Need through concept, design, acquisition deployment and implementation. Experience includes both commercial and Government. Within the DOD experiences range from individual systems to joint programs and across multiple programs. Personnel have extensive experience with both functional systems and standards capabilities and represent a continuing involvement with the MAISRC from its inception. This staff has exceptional qualifications for providing direction, planning, evaluation and integration needed to oversee the development and performance of A&L systems.

Question. Place in the record at this point a table showing DOD logistics ADP system expenditures by each fiscal year, appropriation, and major system since fiscal year 1980. Include both the costs for upgrades and for operating existing systems?

Answer. The information requested is not readily available from existing documentation. The Defense Components have been asked to furnish requested information. We will respond to the Committee by June 13, 1986.

Question. Provide for the record by system the current life cycle cost estimate for each major automated logistics information system?

Answer. The information requested is not readily available from existing documentation. The Defense Components have been asked to furnish requested information. We will respond to the Committee by June 13, 1986.

Question. Provide for the record by system the current life cycle cost estimate for each non-major automated logistics information system whose life cycle cost is estimated to exceed $25 million?

Answer. The information requested is not readily available from existing documentation. The Defense Components have been asked to furnish requested information. We will respond to the committee by June 13, 1986.

[CLERK'S NOTE.—The answers to the above three questions were provided too late to be printed at this point. They will be printed at the end of this volume. See page 749.]

CAD/CAM TECHNOLOGY

Question. Dr. Wade, do you require each Service to have a well thought out and planned CAD/CAM acquisition strategy, or will you allow interim requirements contracts to proliferate?

Answer. Yes, we will require each Service to develop and implement a well thought out and planned acquisition strategy for systems that employ specific CAD/CAM capabilities. "CAD/CAM" is among the many advanced technologies utilized by DoD to more efficiently design, produce, and support new weapon systems. However, CAD/CAM is not a single, isolated technology, but rather an umbrella term used to describe application of state-of-the-art computer-based technology to a broad class of problems related to design and manufacturing functions. In the context of the questions asked, we understand the term to refer to computer aided design and engineering applications, rather than the full scope of manufacturing and production. DoD does not and cannot manage "CAD/CAM technology" per se. DoD will coordinate the application of these technologies for selected high payoff functions such as logistics, principally by defining the interface standards for ensuring system compatibility and integration. Moreover, because CAD/CAM is not a single technology, but rather a family of interrelated technologies, there will be tailored acquisition of CAD/CAM capabilities by functional user organizations within each Service. The basis for being able to implement this strategy successfully is the program DoD has established with the National Bureau of Standards to develop the technical standards for interfacing and intergrating the hardware and software acquired by each functional user community. These national standards will be adopted and implemented by DoD, computer manufacturers, major defense contractors, and their suppliers.

Question. How much is budgeted by service and appropriation (including industrial funds) in each fiscal year 1985 to 1991 for the acquisition and O&M of CAD/CAM technology?

Answer. The funding by Service and appropriation is not available for the fiscal years 1985 to 1991. This information is not carried as a separate line item, but is incorporated within the budget of each functional user. Funding requirements will be reviewed by OSD and the Services as they are identified.

Question. Are all Service programs fully funded?

Answer. Service programs are not fully defined at this time. Funding requirements will follow from the development of implementation and acquisition strategies by each functional user community.

Question. How does budgeted funding compare to the requirement?

Answer. Specific shortfalls are not yet fully identified. However, in the case of the Navy Industrial Funds, the preponderance of CAD/CAM requirements will be satisified from within available funds.

Question. What OSD oversight, particularly through the Major Automated Information System Review Council, is planned for Service CAD/CAM "architectures," strategic plans, and specific acquisition plans?

What involvement have you had to date, Dr. Wade?

Answer. There currently are no scheduled MAISRC's planned for CAD/CAM. The Services are establishing their Computer Aided Logistic Support (CALS) organizations, implementation plans, and CAD/CAM acquisition strategies at this time. Architectures, strategic plans, and acquisition plans for systems employing specific CAD/CAM technologies will be reviewed by OSD and by each Service to ensure that system integration guidelines and interface standards estabished by the CALS program are met. The MAISRC would focus on specific hardware system acquisitions which meet the MAISRC criteria for major systems outlined in DoD DoD Directive 7920.1.

NICADMM

Question. Why is the Navy not following the Committee's fiscal year 1986 guidance on the NICADMM program? Explain in detail Navy near- and mid-term plans for the acquisition of CAD/CAM technology, the associated estimated acquisition and life cycle costs, and the acquisition strategy.

Answer. The Navy was told to apply $10M in FY86 OMN funds, from within its own budget to CAD/CAM. The Navy has identified that it is spending $6.17M in FY86 monies. As the Navy proceeds with the development of its CAD/CAM acquisition, it is likely that it will apply additional FY86 funds to CAD/CAM technology.

The Navy is entering the second phase of a three phase CAD/CAM acquisition program. The first phase was the CAEDOS contract put in place by its laboratory community. The second phase Navy Graphics CAD/CAM Acquisition (NGCA) is being put in place by NAVSEA for the Systems Commands (including the laboratory community). This phase has passed Milestone Zero, and is expected to be at Milestone II before the end of FY86. The third phase, planned for FY 93, consists of two parts. The first part is to start now with the establishment of a dedicated technical support site at David Taylor Naval Ship Research and Design Center. This site will support the NGCA acquisition, but is principally aimed at establishing a firm technical basis from which the Navy can commence its third acquisition phase in 1993.

Question. How large are the contracts that Navy plans to let under Navy Graphics CAD/CAM (NGCA) acquisition program?

Answer. This information will be known at Milestone II by the end of FY 1986.

Question. Why is the Department not planning to require vendors to bid on the total known requirement, such as is common for standard mini- and micro-computer contracts—some of which may cost as high as $480 million (e.g., AF AMMUS contract).

Answer. Vendors may bid on the total known requirements. That is why the Navy has embarked on an extensive Request for Information process. Vendors may also bid on a selected portion of the requirement. The Navy reconginzed that the CAD/CAM industry and its technical base is both maturing and dynamic. Further, the Navy has articulated a phased, competitive acquisition strategy leading into the late 90's. The Navy believes that single award to one organization would neither nurture the industry nor provide a vigorous competitive environment for the Navy's third acquisition phase in 1993. This strategy was outlined by the Navy when it briefed industry representatives on 7 Feb 1986 and released its RFI to industry for comment. The overall acquisition strategy selected by the Navy will balance the requirments to CAD/CAM functional integration against the objective of maintaining competition.

Question. Has OSD formally approved the Navy's CAD/CAM acquisition strategy? If so, why are you allowing a piecemeal, fragmented approach, Dr. Wade?

Answer. OSD has not formally approved the Navy CAD/CAM acquisition strategy, because it would be premature for us to do so. The Navy has not fully formulated the details of their strategy. They will have done this when they complete System Decision Paper (SDP) I/II before the end of of FY86. We are in frequent face-to-face communications with the Navy as their acquisition strategy is being defined. As a result of this dialogue, we consider the approach they are developing to be neither piecemeal nor fragmented. The Navy has in place a CALS Steering Board chaired by a flag officer on the CNO staff. The systems commands have each provided flag/SES membership on this board, which is monitoring the CAD/CAM acquisition. Each systems command and associated CNO staff sponsor are rigorously documenting their requirements and developing formal acquisition plans. The acquisition strategy will be structured to satisfy the interface requirements identified in a preliminary system design that integrates functional requirements and information flows for major user communities such as the SSN-21 acquisition. The proposed strategy will be reviewed by OSD prior to release. The Navy is also moving promptly to establish a CAD/CAM control site in keeping with OSD's relationship with NBS.

Question. What funds by appropriation or industrial fund are contained in the fiscal year 1987 Navy budget for NGCA?

Answer. This information will not be available until System Decision Paper (SDP) I/II are completed.

Question. Summarize the response the Navy has received to the NGCA proposal recently sent to industry.

Answer. Attached is the list of the organizations who have responded to the Navy's RFI. This initiative of the Navy will begin the deliberate application of computer technology to the full range of the Navy's Computer Aided Logistic Support (CALS) requirements under a set of common technical standards. This should reduce the effort which has to be devoted to establishing capability among competitively acquired hardware, and permit full focus on the capability of the technology to support mission accomplishment.

Adra Systems, Inc.; Analysis Technology; Apollo; Autodesk; Autotrol Technology; Baham Corporation; Boeing Computer Services; Calay; Calma; CAE International; CIMLINC; Computational Graphics; Computational Mechanics; Computervision; Conrac; Control Data Corporation; Convex Computer Corporation; Cray Research Inc.; Daisy Systems Corp.; Digital Equipment Corporation; Electronic Data Systems Corp.; Fairline Technologies, Inc. Filetek; Floating Point Systems, Inc.; Gerber Scientific Instrument Co.; Hewlett Packard; Holquin; Honeywell, Inc.; Intec; InterCAD Corporation; Intergraph Corporation; International Business Machines; Jonathan Corporation; Lockheed Corporation; Martin Marietta Data Systems; McDonnell Douglas Automation; Optigraphics; PDA Engineering; Precision Image; Prime Computer; Scientific Calculations, Inc.; Silicon Compilers; Silicon Graphics; SMS Data Products Group; Sun Microsystems, Inc.; Symbolics; Synercom; Tektronix; Texas Instruments; Valid Logic Systems; Veritec Sesam Systems; Versatec; VSE Corporation.

Question. Provide for the record the fiscal year 1986 and earlier funds which Navy has obligated for CAD/CAM acquisitions. Provides programmed, committed, obligated, and expended amounts by year, appropriation/fund, and contract.

Answer. The Navy CAD/CAM program is not identified as a line item in the budget; and the requirement for CAD/CAM equipment is not separately programmed and budgeted. Instead, requirements are budgeted at each individual activity when needed. CAD/CAM equipments are almost exclusively NIF funded.

The CAEDOS contract was the primary vehicle through which the Naval community procurred CAD/CAM equipment in the early 80's. Expenditures made against this contract were as follows.

Year	*Amount*
1982	$19,263,397.55
1983	15,194,310.29
1984	16,308,735.96
1985	12,822,928.54

Year	Amount
1986	15,203,945.90

Question. What OSD official is responsible for and accountable for the efficient acquisition of CAD/CAM technology and its efficient integration into DoD logistics systems?

Answer. Because of the ambiguous nature of the term "CAD/CAM," there can be no one single person/organization responsible for the technology implied by the term. Instead, applications of CAD/CAM are the responsibility of the individual organization (at the appropriate level of command) where CAD/CAM technologies are used as tools. Through the Computer Aided Logistic Support (CALS) program, OSD will provide guidance on the use of interface standards to ensure compatibility and integration of the automated systems providing CAD/CAM capabilities. The Director of the OASD (A&L) Weapon Support Improvement Group, Mr. Russel R. Shorey, is Chairman of the DoD-wide CALS Steering Group, which is responsible for coordination and implementation of the CALS program.

Question. What ADP expertise does this office possess?

Answer. Mr. Shorey has a background in system design and weapon system design and support planning that includes work at Lincoln Laboratory and the MITRE Corporation, responsibility for strategic and tactical command and control system projects in OUSDRE, and current responsibilitly for Computer Aided Logistic Support program implementation. He is supported in CALS management by a DoD staff that includes an individual with a Ph.D in operations research, another who has extensive military and civilian experience in management of weapon system acquisition programs using computer aided technologies, and another with a broad background in design and implementation of automated logistic management systems. In addition, The National Bureau of Standards (NBS) has detailed to Mr. Shorey a Senior Executive Professional Engineer with considerable experience in CAD/CAM research at NBS as well as having served at NBS as Director of Standards. The CALS program under Mr. Shorey's direction is supported by an NBS team of data system interface specialists and an OSD CALS Office that will be staffed with Military Department experts in the use of automation technology for weapon system acquisition and support.

Question. What specific CAD/CAM expertise does it have?

Answer. The heavy emphasis placed on CAD/CAM capabilities as a key element in CALS implementation has insured that the personnel involved in CALS program management have a extensive knowledge of CAD/CAM systems and applications. One of the DoD personnel listed in the preceding paragraph is a member of both the national IGES Steering Committee and the American National Standards Instaitute Committee involved in developing and publishing standards for CAD/CAM interfacing. The NBS CALS support team includes technical specialists with considerable direct expertise in CAD/CAM technology.

Question. Provide for the record written OSD guidance to the Services concerning planning for acquisition CAD/CAM technology.

Answer. OSD guidance on the integration and intefacing of automated systems providing CAD/CAM capabilities is provided in the Computer Aided Logistics Support (CALS) implementing memorandum, which was included in the Report to Congress dated March 28, 1986. Further guidance to the Services on system compatibility and integration is being developed under the CALS program.

TRIDENT LOGISTICS DATA SYSTEM

Question. The Trident Logistics Data System has a life cycle cost of $477 million. Congress has heavily invested in standard Navy logistics systems whose life cycle costs exceed $2 billion and which will support all Navy ships other than Trident.

Dr. Wade, why do you think it is necessary to develop, operate, and maintain a dedicated logistics information system in support of the Trident Submarine?

Answer. The Trident LDS supports maintenance of the Navy's strategic ballistic missile submarine (SBBN) force. These submarines were designed to be supported by a unique maintenance concept, the engineered operating cycle. To reduce the period which Navy ships normally spend in overhaul and to increase the effective at-sea time, Trident was designed so that the essential maintenance could be done in 18-day in-port periods between patrols. This places very rigorous demands on the logistics support system not faced for other Navy weapon systems. To meet the turnaround time for maintenance information and supply support, it was necessary to develop a unique Trident maintenance management system which integrated data from the following Navy standard systems: Uniform Inventory Control Point UICP), Uniform Automated Data Processing Systems for Stock Points (UADPS–SP), Stock Point Logistics Integrated Communications Environment (SPLICE), the Mantenance Data System, the Shipyard Management Information System (SYMIS), the Ships Configuration and Logistics Support Control System, and the Shipboard Non-tactical ADP Program II.

The Trident LDS has been designed to support maintenance management, perform configuration status accounting, and provide integrated logistics support information to Logistics Element Managers (LEMs), Participating Managers (PARMs), and operational phase users (e.g., Trident submarines and Trident Refit Facilities) In support of their life-cycle responsibilities.

Question. What analysis have you personally made on the wisdom of this half billion dollar investment, Dr. Wade?

Answer. The Trident LDS has not been subjected to either a MAISRC of CRC review at the OSD level. Development costs through FY 1985 are $18 million. The total development costs are estimated at $41 million through FY 2008. Life Cycle management reviews are conducted by the Naval Automation Command. The last Systems Decision Paper 3 was approved in late 1985. At the time the development effort was 70% complete.

Question. Are Trident logistics support requirements being considered and being incorporated into the Navy's Inventory Control Point system, the standard Navy logistics system in which Congress will invest $550 million?

Answer. Since the inception of the Trident Logistics Data System, one of the primary requirements was to utilize existing UICP and UADPS-SP systems to the maximum extent for supply support. The redesigned UICP and UADPS-SP systems will continue to support Trident supply requirements.

Question. When the redesigned Inventory Control Point system becomes operational, will the Navy continue to maintain a dedicated logistics management system for the Trident?

Answer. Navy will continue to maintain a dedicated Trident system.

Question. If so, why?

Answer. When the redesigned UICP system becomes operational the Supply Support requirements for the Trident System will be supported by the redesigned UICP system. The UICP Support System provides the primary or Navy common supply support products such as COSAL, Load Lists, inventory management, provisioning, etc. for Trident, and will continue to support Navy common supply support requirements of the Trident System. To meet operational and maintenance requirements of Trident, the integrated LDS must be maintained.

Question. How much would it add to the life-cycle cost of the Inventory Control Point system, to incorprate data requirements for the Trident?

Answer. The Trident LDS is not a stand-alone system but rather a system that integrates standard systems into a unique maintenance management systems. The Trident LDS concept capitalized on existing Navy standard information systems. Since the UICP system is one of the standard systems integrated into the LDS, there are no additional life cycle costs required for UICP to support Trident.

Question. How does this compare to the cost of a Stand-alone system?

Answer. Since Trident integrates information from a number of individual systems, including UICP, and incorporates functions not part of the UICP mission, a direct comparison of life-cycle costs is not available, nor would the meaning of such a comparison be clear.

Question. We understand the Navy's concern on Trident to be one of priority. Why is it not feasible to design a Trident priority capability into the Inventory Control Point system?

Answer. Trident logistics support priorities are now supported by the existing UICP systems and will be retained in the redesigned UICP system. These priorities are supported by Trident parameters which are utilized by the standard UICP system to produce Trident Supply Support products. Trident maintenance priorities are and will be supported by the Trident unique maintenance management system.

TACTICAL ARMY COMBAT SERVICE SUPPORT COMPUTER SYSTEM (TACCS)

Question. The Army plans to purchase about 14,000 microcomputers in the Tactical Army Combat Service Support Computer System which will be used in the field by combat units for logistics and administrative purposes. The system is estimated to cost $2.3 billion in acquistion and operation and maintenance costs throughout its estimated 10 year life cycle.

Dr. Wade, the Committee understands that as a result of November, 1985 Army audit on TACCS, you directed that the program be held to a minimum acqusition level until the problems are worked out.

What are the problems with TACCS, and what actions have you taken to resolve them?

Answer. The Computer Resources Council (CRC) held an In-Process Review on January 29, 1986 to determine the Army's readiness to proceed with its Milestone III decision on TACCS. The review focused on problems and issues identified by the Army Audit Agency and the OSD staff. Below is listed a summary of concerns.

a. Insufficient operational testing and evaluation under garrison and field conditions.

b. Lack of full funding necessary to executive the approved program.

c. Lack of an economic analysis with supporting Life Cycle Cost Estimates, for all the application systems approved to use the TACCS.

d. Management relationships and coordination between TACCS and the application programs need to be strengthened.

e. Lack of a current computer resources plan.

f. Need to complete an evaluation of a Value Engineering Change Proposal (VECP) to remove TEMPEST requirements.

g. Lack of an analysis of alternative maintenance concepts.

h. Need to adjust the acquisition strategy to provide an option to recompete contractor maintenance.

Based upon the data provided for the CRC review and recognizing the overall need for automation in combat service support, the Army was allowed to proceed and execute its next contract option. However, issues remained unresolved and action to resolve them must be completed before full deployment is approved. The Army was directed to limit the TACCS production rate to a maximum of 60 per month, up to maximum order of 600. The Army was requested to complete all the CRC tasks, and report back no later than the end of August 1986.

Question. For how many years and in what amounts have appropriations of TACCS been made?

Answer. Appropriations for the TACCS have been made for three years, in the following amounts broken down by Other Procurements, Army (OPA), and Operations and Maintenance, Army (OMA):

Fiscal year	Total	OPA	OMA
1984	$12,300,000	$12,300,000	
1985	28,100,000	20,700,000	$7,400,000
1986	91,000,000	44,600,000	46,400,000

Question. Why did your office only get involved once major management problems were discovered by auditors?

Answer. The TACCS program was developed under a highly desirable Nondevelopmental Item (NDI) concept were off-the-shelf commercial items are ruggedized and put into inventory. It is important to note that the TACCS system performs its intended functions, but is being challenged because of insufficient operational field testing for reliability. The TACCS was identified in February 1985 as a major system to be reviewed by the CRC. OSD staff work to set up the review had been initiated prior to release of the Army Audit report.

Question. Why is your office only reactive, rather then proactive, when it comes to reviewing acquisition of major automated information systems?

Answer. The Office's action was proactive. We had begun a review of the program before the problems surfaced. The CRC reviews have been consolidated into the Major Automated Information System Review Council (MAISRC) process to ensure a single, simplified and active OSD oversight process.

Question. Why had this $2.3 billion system never been reviewed and approved by OSD as required by DoD policy?

Whose fault is this?

Answer. The TACCS program originated during the period that the Warner Amendment was being implemented. To the best of our ability, during this period, we gave priority to major programs where action was necessary to implement this direction most effectively. At that time TACCS had not been identified as a program requiring CRC review. The TACCS was placed on the CRC schedule in September 1985 and a review of the TACCS program began in October 1985.

Question. The auditors disclosed that only limited information had been provided to OSD on the system's life cycle costs, and that information was inaccurate. The Committee notes that last year OSD testified that TACCS life cycle costs would be only $350 million, but GAO recently informed us that $2.3 billion is actually the current estimate.

As senior official responsible for acquisition, Dr. Wade, why did you allow this situation to occur?

Answer. OSD establishes policies for the review of major systems and ensures, as far as possible, that those policies are followed. The $350 million estimate was for hardware procurement. The larger figure is life-cycle cost. These costs are being reevaluated in light of declining computer costs. OSD was already preparing to review the system when we found out about the higher cost estimates.

Question. What actions will you take to prevent similar anomalies in the future?

Answer. Our policies on major Automated Information Systems (AIS) require that cost benefit analyses and life-cycle cost estimates be prepared and evaluated at milestone reviews. We are ensuring that potential major AIS's be identified during the budget process and reviewed by MAISRC or the Components.

Question. Why did you allow the acquisition of a $2.3 billion system to proceed without ever conducting an economic analysis on it?

Answer. Several partial economic analyses were made to determine hardware and software costs. The CRC did not consider these adequate. The Director of Cost Analysis is now overseeing and will certify an overall economic analysis to reaffirm the TACCS affordability.

Question. Why did you initially allow the acquisition of a $2.3 billion system to proceed without requiring peacetime and wartime maintenance concepts to be defined?

Answer. This was a factor which led to the decision to limit the production of TACCS until such issues were resolved.

Question. What will you do to solve the personnel growth issue—the unforeseen need for 564 more maintenance personnel—disclosed by the auditors?

Answer. The 564 number reported by the auditors included personnel required for the Unit Level Computers (211) and for the Logistics Marking and Reading Symbols Systems (120). The number reported included 233 maintenance personnel for the TACCS.

Question. Why did you initially endorse an acquisition strategy that did not require contractor logistics support for this $2.3 billion system to be completed, even though this is a common practice for such equipment?

Answer. Contractor logistics support was established competitively as part of the basic TACCS contract award. In order to ensure that the approved TACCS maintenance concept continues to be implemented in the most economical manner, the Army intends to recompete the maintenance portion of the TACCS contract approximately 18–24 months after the start of full production.

Question. Why did you allow the Air Force and Army to pursue different logistics support efforts for essentially the same equipment?

How much will this duplication cost the taxpayer?

Answer. Representatives from the Army and Air Force have had on-going dialogue since the inception of the TACCS program. The Air Force requirement is for a commercial, off-the-shelf, rather than a ruggedized system, and each Service has its own supply system, hence there are different applications and logistic requirements. Maximum use of a common maintenance facility is being provided by System Development Corporation (SDC) which is already sharing support resources for both the Army and the Burroughs B26 based Deployable Combat Supply System (DCSS) Air Force programs. The Army and the Air Force will continue to pursue joint economic benefits and prevent duplicative costs to the taxpayer, where commonality is practical.

Question. What will you do to solve the growth in the number of vehicles required to transport the TACCS system that was disclosed by the auditors? Is TACCS "baselined"?

Answer. The Basis of Issue Plan (BOIP) processed for TACCS did not identify the requirement for any additional vehicles to transport TACCS systems. To date over 500 TACCS have been fielded, many to tactical units. In no instance have any of the units stated that insufficient vehicles exist for the transportation of the system or required supplies. Any additional increase in space needed to transport TACCS equipment is offset by the decrease in space needed to support personnel replaced by automation. The current plans call for the production of approximately 9,000 systems Army-wide with potential applications to increase the number of units to 14,000.

Question. Why did you initially endorse an acquisition strategy that did not require testing of TACCS equipment in a combat, field environment—especially under conditions of chemical warfare?

Answer. The Army had planned that the TACCS system undergo extensive testing including First Article Testing, Hardware, Operational Testing and Software Acceptance Testing. Field use has included Exercise "Bright Star" and over 2000 hours of operation by the 24th Infantry Division. Additionally, TACCS has been used successfully at the National Training Center. The CRC recently directed the Army to complete additional operational testing to ensure TACCS will meet the Army's operational requirements under both peacetime and wartime conditions. A Follow-on Operational Test and Evaluation (FOTE) is scheduled to be conducted beginning 27 May 1986 at Fort Gordon, Georgia, in response to this requirement. Survival in an environment under chemical warfare conditions will be met by placing the equipment in a chemically protected environment currently being tested by the Army.

COMMODITY COMMAND STANDARD SYSTEM

Question. The Commodity Command Standard System is a backbone Army logistics system whose life cycle cost is estimated to be $765 million.

The Army's budget documentation states that under CCSS "acquisition of large-scale computers to replace the currently-installed equipment is being pursued." Dr. Wade, why is this necessary?

Answer. An input is required from the Army before this question can be answered.

Question. How much will it cost?

Answer. An input is required from the Army before this question can be answered.

Question. What analyses of the wisdom of this investment have you personally made, Dr. Wade?

Answer. An input is required from the Army before this question can be answered.

Question. A recent GAO audit (Army Materiel Command needs to follow procedures: Code 510011) is extremely critical of the Army's ADP management of CCSS. Specifically, the Army has consistently failed to follow Army ADP directives, perform economic analyses, track project costs, and review completed projects. The Congress is thus placed in the position of approving CCSS projects regardless of whether they are economical, worth the cost, or are the most cost-effective alternatives available. Dr. Wade, what procedural changes do you plan to make in light of GAO's adverse findings on the Department's management of this system?

Answer. An input is required from the Army before this question can be answered.

Question. Do you plan to conduct a fully competitive acquisition?

Answer. An input is required from the Army before this question can be answered.

[CLERK'S NOTE.—The answers to the above five questions arrived too late to be printed at this point. They will be printed at the end of this volume. See page 752.]

AIR FORCE LOGISTICS COMMAND MODERNIZATION

Question. The Air Force is developing ADP systems to modernize its logistics operations at an estimated life cycle cost of $1.8 billion.

The Committee designated the Air Force logistics modernization program as an item of special interest, and directed the Air Force to inform the Committee in writing when LMS program funds are reprogrammed, diverted, or when significant cost growth or program slippage occurs.

Dr. Wade, how did the Department inform the Committee of the elimination during fiscal year 1986 of the logistics C^3I program?

Answer. The Congressional guidance cited in the House Appropriation Report on the FY 1986 Defense Appropriation (HR 99-332) requires reporting of changes to appropriated funds. The LOG C^3I project appropriated funding has not changed. Air Force is implementing an agreed to plan for the most critical C3 elements. This is being accomplished with FY 1985 and FY 1986 appropriated funds. The loss of out year funding for additional capability does not require Congressional notification. The restructured LOG C^3I program for the FY 1988 budget did receive Air Force approval in the POM. The next MAISRC in-process review (IPR) of LMS will include a detailed briefing on the present LOG C3 plan and residual tasks.

Question. How was the Committee informed of the significant life cycle cost growth of $319 million between the fiscal year 1986 and 1987 budgets to Congress for the LMS projects?

Answer. Our life cycle costs for the ten programs in the Air Force Logistics Management Systems (LMS) modernization program show a decrease in life cycle cost from $1.7 billion to $1.49 billion.

Question. Has the Air Force, in your opinion, completed the required initial lifecycle management steps well enough to justify additional investments?

Answer. Yes. We visited the LMS Program Management Office (PMO) at the beginning of April 1986 and were favorably impressed with the progress that has been made and the management structure and controls the Air Force has put in place for LMS. The Air Force has established comprehensive guidelines and procedures for ADP lifecycle concepts. They are contained in AFR 700-4, Volume I, Information Systems Program Management; and standards for ADP system lifecycle concepts in AFR 700-9, Volume I, Information System Standardization Program. The AF 300 series regulations contained similar guidelines and procedures. In addition, the AFLC LMS Modernization Plan conformed to the spirit and intent of DoD Directive 7920.1, "Life Cycle Management of Automated Information Systems" and DoD Directive 7920.2, "Major Automated Information Systems Approval Process." The AFLC is successfully meeting the logistics responsibilities of peacetime and war surge scenarios through continued modernization of its logistics systems.

Question. Do mission needs documents, data automation requirements, economic analyses adequately identify, prioritize, and quantify the benefits to be derived by each of the LMS projects?

Answer. Yes. The AFLC developed LMS Mission Element Needs Statement (MENS), dated September 8, 1981 describes the major deficiencies in the existing logistics operations and the impact of the deficiencies on the Air Force mission in war surge and peacetime. In addition, AFLC developed and published a Mission Support Document, dated September 1, 1981 that identified mission deficiencies by logistics process. Data Automation Requirements (DARs) presented the mission requirement for approval of system development. The DAR contained: the requirement justification, alternatives considered and rationale for alternative selection, system lifecycle costs, suggested priority, and benefits expected (tangible and intangible). AFLC employs a third party review/validation analysis of all DARs for adherence to governing policy and regulations. Economic analyses are carefully analyzed to quantify the cost benefits associated with the alternatives presented to satisfy the mission requirement. A third party review ensures the document meets policy guidelines, is complete, cost effective, and satisfies mission essential requirements. Economic Analysis certifications are performed and the DARs are then assigned a command priority determined through AFLC Board Structure review commensurate with the mission need.

Question. Are comprehensive cost benefit analyses that justify a planned development required and actually prepared before proceeding with system development?

Answer. Yes. The lifecycle costs of the system, and level of effort needed to develop and document functional needs, are determining factors applied to Economic Analysis (EA) preparation. On occasion, system benefits of improved force readiness, rather than AF cost savings, preclude EA preparation in support of mission requirements. Because of the acquisition cycle lead-time necessary to meet critical needs, on very rare occasions system development may start while the EA is still undergoing revision prior to final certification. Per AFR 178-1, authority to grant waiver for EA submissions rests with the ADP Single Manager; however, waivers are seldom approved. Submitted EAs receive specific analyses and review prior to certification.

Question. Are data requirements identified before beginning development?

Answer. Yes. DARs must be validated and approved before resources can be applied for development. Emergency situations for major deficiencies can be approved by the ADP Single Manager in cases where "quick fixes" can resolve the deficiency, i.e., war readiness during combat scenarios. All other system developments are subsequent to validated and approved requirements documentation.

Question. Why were the requirements and justification studies for EDCARS based on an analysis of only one of the five Air Logistics Centers?

Answer. The AFLC utilizes standard organizational structure, procedures and systems at each of the five Air Logistics Centers. Therefore, it was only necessary to perform the requirements and justification studies for EDCARS based on analysis at one Air Logistic Center.

Question. Why has the Secretary of the Air Force directed AFLC to accelerate the EDCARS fielding date by delivering hardware to all the Air Logistics Centers in calendar year 1986 even though the Army—the single program manager—has not obligated its funds because the contractor has not demonstrated that the system will work?

Answer. The Secretary of the Air Force did not direct acceleration of EDCARS fielding date by delivering hardware to all Air Logistics Centers in calendar year 1986. The Secretary of the Air Force directed EDCARS be funded in FY 1986. As a result of this direction, AFLC developed an acquisition schedule with acceptable risk which included delivery of the last systems in calendar year 1987. On April 3, 1986 the Air Force exercised options for the last four EDCARS systems on the basis that: (1) the system was formally demonstrated as a working system on February 28, 1986, and (2) that AT&T was, in fact, solving management and technical problems. The current manual system has been identified as a major inhibitor to the Air Force's capability to assure equitable pricing and enhanced competition. Due to the contract structure, the earlier the follow-on EDCARS options were exercised, the earlier the systems could be delivered and implemented. Consequently, the Air Force made a calculated decision to exercise options, fully expecting to receive good, operating systems with minimal risk.

Question. Do you concur. Dr. Wade?

Answer. Yes.

Question. Why is the Air Force eliminating the C^{3}I program?

Answer. The LOG C^{3}I program was restructured for 1987 and beyond during the FY 1987 POM issue cycle. The decision was nonprejudicial. It was made to preserve higher priority programs.

Question. Does the need still exist?

Answer. Yes, the LOG C^{3}I requirement is still valid. The restructured LOG C^{3}I program consists of three parts: (1) The Battle Staff Management System which automates AFLC Emergency Operations Centers to enable more responsive and effective support to Commanders in wartime and periods of crisis; (2) WWMCCS Information System which will enable AFLC to process logistics data and provide logistics feasibility/capability information to Commanders in a secure mode during the planning, execution, and reconstitution phases of wartime activity (a program decision package has been submitted for this system); and (3) Weapon System Management Information System (WSMIS) enhancement for which a new program decision package has also been submitted for funds to enhance the current WSMIS to include new capabilities for determining the effect the depot infrastructure (maintenance and distribution) has on wartime logistics support.

Question. What funds were requested of Congress by appropriation in each fiscal year 1985 to 1987?

Answer. Funds requested of Congress (in millions of dollars) for fiscal years 1985 through 1987 are as follows:

Appropriation	FY85	FY86	FY87
3400	1.2	2.8	4.9
3080	2.8	2.3	12.6
3600	.0	10.2	10.2
3300	.0	.1	1.5

Question. What does the Air Force plan to do with the funds that were appropriated for this purpose?

Answer. The Battle Staff Management System is being developed with the FY 1985 and FY 1986 LOG C^3I funds. The FY 1987 funds were deleted as previously discussed.

Question. Congress appropriated $4.2 million in fiscal year 1986 for the AFLC local area network. The current budget shows programmed funds fo $56 million for this purpose. Why is acceleration thought to be necessary or prudent?

Answer. The dollar amounts in the question are not familiar. The Local Area Network (LAN) program baseline for FY 1986 was $8.5 million, which was appropriated. There is no other official budget number for LAN in FY 1986. The LAN was accelerated in FY 1985 as a result of management decisions required to support ongoing acquisition programs (such as the Requirements Data Bank and Stock Control & Distribution) in time for program implementation.

Question. Explain the 600 percent growth in five-year costs of the AFLC local network to $162 million?

Answer. Since the LAN's initial baseline of $161.4 million was established on January 31, 1985 the costs of the LAN program have been uniformly decreasing. The initial DAR (LOG–LMD–Q85–036), submitted in 1983, was an estimate made with incomplete requirements definitions and known to be a low estimate at $24.2 million. The current acquisition baseline is $122 million.

Question. How does the design and architecture of the local area network reflect security requirements?

Answer. The Logistics Management System (LMS) architecture meets the security requirements of the information to be processed. Security is a consideration of both the local area network (LAN) and the host processors, which are the key elements of the LMS architecture. The LAN is designed to transmit unclassified data, of sensitivity levels up to ADP lb (critical-sensitive, with an exploitable value exceeding $10 million) and critical levels up to ADP la (highly-critical, and whose denial, loss, or unauthorized alteration would jeopardize MAJCOM capabilities in the first sixty days of conflict). Current LAN protection decisions were made based on the conclusions of a security risk analysis performed by MITRE for Electronic Systems Division (ESD), and documented in the classified technical report, LAN Threat Environment Description. The probability of occurrence of successful tapping of the broadband cable, in its planned controlled environment, is considered minimal, and thus, an acceptable risk. Transmission lines, network control facilities, and network interface units are located on controlled Air Force bases. Individual host processors, which have a minimum C2 Trusted Computing Base (TCB), control access to the application systems and their resident data. The C2 TCB is a level of protection defined by the National Computer Security Center, which provides capabilities for access control, object re-use, user-ID/password, and audit trail.

Question. How many contractors are developing the local area network?

Answer. The Air Logistics Command LAN is being installed by a single contractor, TRW Defense Systems Group. TRW has many subcontractors composed of Interface device suppliers, cable suppliers and installer and LAN designers among others. TRW has a very comprehensive sub-contractor management plan. The successful implementation of this plan has been demonstrated by their handling of such tasks as insuring the financial health of their subs and engaging in open competition among suppliers.

Question. How does the Air Force ensure that adequate coordination is taking place among the contractors?

Answer. As noted above, TRW's sub-contractor management plan provides for extensive control of work in process. Monthly Program Management Reviews are required by the contract and TRW uses a similar methodology with their sub-contractors. In addition, there is a MITRE representative at each site acting as the representative of the ESD office.

Question. In the design of the local area network, did you include the ability to migrate to new technologies and new workloads?

Answer. The contract for inter-building trunking includes extra cables for future growth and fiber-optic cables to hedge against new technology. Additionally, the architecture requires that the design includes 25% expansion capability in terms of sub-networks plus 100%, in terms of terminal devices at each Air Logistics Center. TRW is permitted by the contract to apply for productivity saving rewards based on a proposal to modernize, improve productivity or reduce costs.

VALIDITY OF SPARES REQUIREMENT DETERMINATION

Question. Dr. Wade, while the Committee wholehartedly endorses adequate funding for spare parts, we have been concerned about the validity of the Services' spare parts requirements determination processes. As you are aware, after the fiscal year 1986 budget was submitted to Congress, Air Force auditors, the Committee's investigative staff, and the General Accounting Office each independently found errors over $800 million in just the Air Force's spare parts budget.

Dr. Wade, we understand that developing and fielding modern ADP systems is really the solution to this long-standing problem in the Department, but what near-term initiatives have you taken to improve the requirements determination process to ensure that we are not wasting funds to buy excess parts which will never be used?

Answer. Improvements are being made in requirements computation accuracy by improving methods of demand forecasting, inventory accuracy reporting, and data input to requirements computations. Also, better performance tracking systems will also help ensure that items are not bought that will never be needed. In addition, the Department is phasing in the use of requirements computations that are geared more toward direct weapon system support that will consider each item's relative contribution to weapon system readiness in determining how many of an item to buy or repair. Components are also now required to check the disposal system for assets before initiating a procurement for a needed item. This was a potential source of assets in the supply system that previously had not been used to offset item requirements. The procedure helps ensure that items are not bought that already exist in the system.

Question. Your statement indicates that DoD has implemented a "new computational policy" that will improve the validity and accuracy of the requirements submitted in future budgets. Please describe your new policy and the benefits it will achieve.

Answer. The statement refers to a new computational policy for war reserve requirements which are developed in a separate process for that used to determine peacetime spares requirements. The new policy prescribes a detailed computational algorithm that ensures a consistent computational approach across Services.

Question. For the record, show what changes have been made in the fiscal year 1987 budget submission by Service and amount to institute this change.

Answer. Although the new policy will impact future budget requests, it was not fully implemented at the time the FY 1987 budget was developed and specific impacts by Service are not identifiable.

Question. Please describe for the record the definitional change that has been made, particularly in the Air Force, between replenishment and initial spares. Show the impact this change had on the fiscal year 1987 budget request (to include impact on prior years, if applicable).

Answer. Spare parts are classified as "initial" or "replenishment." In the past, in the absence of any clear DoD guidance as to when parts should transition from initial to replenishment, Military Departments were classifying parts as initial during the demand development period and as replenishment thereafter regardless of the purpose for which the parts were purchased. When site activations occurred after the completion of the demand development period, spare parts were called replenishment and not shown as a part of the cost of fielding the system. The GAO Report to Congress, "Less Costly Ways to Budget And Provision Spares For New Weapon Systems Should Be Used" (OSD Case #5718) dated September 9, 1981 recommended that the Secretary of Defense redefine, for budget purposes, initial spares to include all spares neded to field a weapon system. This recommendation was implemented through a change to the DoD Budget Guidance Manual. Also, to assure implementation, on March 28, 1985, the Deputy Secretary of Defense sent a memorandum to the Military Departments defining the terms "initial" and "replenishment" spares to that "initial" spares would more clearly be those required to field a weapon system. The new definitions for initial and replenishment spare parts are:

Initial Spare Parts.—Initial spare parts will include those repairable components, assemblies, or subassemblies required as initial stockage at all levels including the pipeline in support of newly fielded end items. Whole spare engines covered by DoDI 4230.4 will be classified as initial spare parts through the life of system.

Replenishment Spare Parts.—Replenishment spare parts will include those repairable components, assemblies, or subassemblies required to resupply initial stockage or increased stockage for reasons other than support of newly fielded end items. Replenishment would include additional stockage due to increase such as usage, readiness initiatives, and redeployment of end items.

The impact this change had on the fiscal year 1987 budget request of the Air Force was a move of $141 million from replenishment to initial spare parts. There was no change in the total funds requested.

EXCESS SPARE PARTS INVENTORY

Question. Dr. Wade, are you aware of and have you questioned the Air Force about its $12.1 billion, or 181 percent, increase in on-hand and on-order recoverable spares in long supply during the 9 month period ending December 31, 1985?

Answer. The problem is that you are comparing budget quality information with raw unadjusted data. The long supply figure referred to is an erroneous total and will be corrected in the March stratification report which will be available in August 1986.

Question. Does OSD agree that there has been a $412 million, or 52 percent, increase in on-order recoverable spares that are excess to nine-year requirements as of the same date, from $788 million to $1.2 billion?

Answer. As stated above this information is taken from a stratification run that is off-cycle. Consequently, inventory or requirements decisions cannot be made from this information.

Question. Dr. Wade, are you satisfied that the Air Force is adequately monitoring the effectiveness of cancelling contracts for unneeded spares?

Answer. There is no indication that the Air Force is not doing a good job in this area, particularly since we know there are data problems in the stratification reports that erroneously show significant increases in on-hand and on-order materiel excess to needs.

Question. To what extent was the $1.8 billion of long supply materiel on order as of last December subsequently cancelled?

Answer. The long supply materiel referred to is an erroneous total. When the GAO originally surfaced this question during a recent audit, the total in question was $1.1 billion. The Air Force performed an analysis and found that approximately two-thirds of the GAO reported total was the result of file maintenance errors that caused materiel to be improperly shown as potential excess.

Question. Dr. Wade, are you in complete agreement with the Air Force's continued use of a minimum 9 month administrative lead time factor to compute requirements for all aircraft spares, in view of recent Air Force statistics that actual administrative leadtimes have peaked at about 7 months?

Answer. The Air Force recently sampled actual administative leadtimes (ALTs) for items which the Air Force has authorized use of a 9 month minimum ALT. The results indicate an average of approximately 8.7 months. The Air Force use of 9 months appears reasonable in light of actual experience. The Department supports the use of realistic ALTs based on actual experience. Additionally, the 7 month figure cited in the question refers only to a portion of the actual leadtime; it does not include the preparation and coordination time required prior to contracting activity.

Question. What would be the effect on the fiscal year 1987 budget if a 7 month factor was used instead of the 9 month factor?

Answer. The Department cannot provide a definitive answer to this question without performing a detailed analysis. However, since the Air Force use of a 9 month ALT is supported by actual experience the usefulness of such an analysis is questionable.

Question. Provide for the record the administrative leadtime factors used by each Service and appropriation (where different).

Answer. Data for the other Services' comparable replacement spares accounts is as follows: Army aviation, 183 days; Navy aviation stock fund, 175 days; Marine Corps, 181 days. The data reflects averages of all procurements regardless of when the last contract was awarded. The Air Force average of 8.7 months is based on actual data depicting the administrative leadtime of contracts awarded in a quarter.

Question. A recent GAO review indicated the Air Force was buying spares 3 to 14 months earlier than necessary. Dr. Wade, did you approve this "buy early" policy in advance?

Answer. On April 17, 1986 the Department provided a response to the GAO on the draft audit report disagreeing with the findings and recommendations. As explained in the DoD response, Air Force contracts specify delivery of materiel in accordance with the actual need date determined by the automated requirements systems. The "early buying" referred to by the GAO is actually early preparation of paperwork. Department policy encourages early initiation of procurement documentation in order to improve the efficiency of the contrcting process and to ensure that major DoD policy objectives such as increased competition and economic order quantity and pricing are achieved. Early initiation of the procurement documentation does not advance the required delivery date or need date that is specified in the contract.

Question. Has it continued?

Answer. The Air Force practice of initiating procurement paperwork early but specifying a required delivery date in the contract that is based on actual need has not changed.

Question. Why are maximum administrative leadtimes and a buy early policy both thought to be needed? Are they redundant?

Answer. These are complementary efforts to address the additional processing time needed to get materiel on contract.

Question. Dr. Wade, why have you authorized the Air Force to increase leadtime factors to 9 months, while at the same time authorizing the use of existing sole-source orders for initial provisioning aircraft spares to be coupled with initial spares buys?

Answer. At the time the Air Force spares replenishment budget was reviewed, the Air Force was actually experiencing the 9 months administrative leadtime. The use of sole-souce procurements are governed by the Federal Acquisition Regulation and must be justified by the contracting officer at the procuring activity. When placing orders for initial spares, there are instances when sole-source is the only feasible contractual method available.

Question. What was your administrative leadtime assumption on B-1B initial spares?

Answer. The technique known as Spares Acquisition Integrated with Production (SAIP) was used on the B-1B. That is, initial spares procurement for the B-1B was combined with the procurement of identical items used in the production of the end items. This method minimizes the cost of spares by avoiding the charges normally associated with separate materiel orders and manufacturing actions. Under SAIP, administrative leadtimes for initial spares becomes a moot point.

Question. Dr. Wade, do you concur with the Air Force's rationale for increasing its Other War Reserve Materiel requirement for aircraft replenishment spares by $2 billion between its October 1985 budget submission to OSD and its April 1986 requirements update?

Answer. We have not seen any of the data used in developing the Air Force Other War Reserve Materiel (OWRM) requirements during the April 1986 update. However, it is premature to make an assessment regarding this information until the Air Force has completed their internal analysis and submitted their FY 1988 budget to OSD. During the budget review the OWRM requirements will be looked at closely to validate both need and accuracy.

Question. Why did you approve the Air Force's inclusion in the fiscal year 1987 budget of $1.5 billion of unfunded WRSK/BLSS aircraft replenishment spares requirements, when these "requirements" had earlier been judged by OSD as not justified and deleted by Congress in fiscal year 1986 and OSD in fiscal year 1987.

Answer. OSD has not challenged the validity of the requirement, only it's affordability. The Air Force WRSK/BLSS requirements referred to in the question are not funded due to fiscal constraints and other competing priorities; however, the requirement is a valid statement of what is needed to satisfy sustainability goals.

Question. Why did OSD approve the Air Force's $203 million fiscal year 1987 budget request for WRSK/BLSS recoverable spares to support a conventional mission, when OSD is on record as believing that the use of the B-1B in a conventional role is questionable?

Answer. During the Department's internal budget review process, OSD questioned whether there was a conventional mission for the B-1B bomber. The classified Air Force response (copy enclosed) discusses the requirement for a conventional capability for the B1-B and the need for WRSK to support the aircraft. This information and discussions with the Air Force fully satisifed OSD concerns and led to approval of the Air Force funding request.

[CLERK'S NOTE.—Classified enclosure removed.]

Question. When will the Air Force fund a deployable maintenance capability that would be necessary to support a conventional mission for the B-1B?

Answer. Requirements have been identified at the item level and will be executable in FY 1987 to support a FY 1989 authorization.

DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR SPARE PARTS

Question. The Committee was surprised to learn in last year's hearing on DoD automated data processing programs that the Deputy Assistant Secretary of Defense for Spare Parts Management does not sit on the Council which reviews the development of DoD logistics ADP systems. Of course, the effective development and utilization of modern ADP systems is perhaps the key feature of the Secretary of Defense plan to end spare parts price abuses.

In our 1986 report, the Committee required the Deputy Assistant Secretary of Defense for Spares Program Management to participate in the review of logistics ADP systems. Dr. Wade, how will you implement this guidance.

Answer. A number of actions have been taken. First of all, the Deputy Assistant Secretry for Spares Program Management has been given expanded responsibilities for all of Defense Logistics. As the new Deputy Assistant Secretary for Logistics, he retains responsibility for spares management initiatives and is also responsibile for supply, maintenance and transportation. Secondly, the DASD for Logistics has been given complete functional oversight responsibility for all logistics systems and is involved in their review in OSD. In addition to that, action has been taken to increase staffing and functional expertise to improve our oversight capability. The DASD for Logistics does attend the MAISRC council meetings when logistics systems are discussed.

Question. Please describe the additional duties and functions that have been given to the Deputy Assistant Secretary of Defense for Spares Management since January 1, 1986.

Answer. The Deputy Assistant Secretary of Defense for Spares Program Management has been given expanded responsibilities that include all logistics functions for the Department. His current position as Deputy Assistant Secretary of Defense for Logistics comprises supply management policy, maintenance policy, logistics, planning and analysis, international logistics, energy policy, transportation policy, and spares programs management. Spares program management has been made a directorate under the Deputy Assistant Secretary of Defense for Logistics which insures that spares management will be fully integrated throughout all logistics disciplines.

Question. Does this office have any dedicated ADP professionals to assist in the formal review of development of DoD ADP logistics systems?

Answer. The Spares Program Management Office is staffed by personnel with expertise in logistics and procurement, all of whom have ADP experience in their respective functional areas. The office assists in the review of logistics oriented ADP systems by providing input to the Assistant Secretary of Defense for Acquistion and Logistics on the utility and design of ADP systems from a functional manager and user standpoint.

Question. Name for the record the specific ADP logistics system upgrades that will be formally reviewed by the Deputy Assistant Secretary of Defense for Spares Management in 1986? In 1987?

Answer. The Deputy Assistant Secretary of Defense for Logistics will handle all logistics systems which fall under the Major Automated Information System Review Council (MAISRC) established by DoD Directive 7920.1 and DoD Directive 7920.2. The schedule for the MAISRC milestone reviews and in-process reviews is estabished by the Department of Defense Comptroller. The schedule for the formal reviews is currently being worked by the Comptroller and the Defense Components. Logistics systems which do not fall under the MAISRC are reviewed by the Acquisitions and Logistics staff during the POM review process.

Question. Name the systems which have been formally reviewed to date by this organization since it was created.

Answer. Since January 1986 the DLA modernization has been reviewed. A review of the Naval Aviation Logistics Command Management Information System (NALCOMIS) is scheduled for June 17, 1986 and a review of the Air Force LMS is planned for late July or early August 1986.

RAND'S SUGGESTIONS FOR ACQUSITION IMPROVEMENT

Question. The Rand Corporation, a DoD sponsored "think-tank", recently reported the following suggestions to improve DoD acquisition:

Improve the process of formulating requirements for needed operational capabilities; make early development more austere; separate critical subsystem development from platform development; encourage austere prototyping; improve the transition from full-scale development to production via "phased acquisition"; focus more attention on upgrading fielded weapon systems; emphasize plant modernization and production flexibility; continuously evaluate acquisition changes.

Dr. Wade, what consideration is the Department giving to the recommendations made by the Rand Corporation?

Answer. I want to point out that the Rand study you referenced found that the average cost growth in major defense programs has been found to be less than that experienced in many comparable civil programs including highway projects, water projects, public buildings and large processing plants.

The Packard Commission has highlighted many of the Rand suggestions in their recommendations. We are currently developing implementation plans that will institutionalize the Packard recommendations.

Question. Is there any policy today that would focus attention on upgrading fielded weapon systems rather than fielding new ones?

Answer. The Defense Science Board recommended an upgrade process for both U.S. and NATO equipment in Nov 1984. We are reviewing the policy changes required to implement that recommendation.

AIR FORCE SYSTEMS COMMAND

Question. The committee's investigative staff recently conducted an investigation of the need for Air Force Systems Command (AFSC), in light of the Navy's decision to eliminate the Naval Materiel Command. The investigation determined that the two organizations were not similar. However, the report indicates that annual savings were possible by transferring manpower functions within

AFSC not directly related to research, development, test, evaluation, and systems acquisition activities to other commands and organizations. Savings would be possible by requiring specific RDT&E programs to fund the support previously received free from the defensewide mission support overhead accounts.

Dr. Wade, what actions are planned in light of the recommendations and findings made in the Committee's investigative staff report?

Answer. It is my understanding that the Air Force is now reviewing the findings and recommendations of the report with considerable interest. At this point I don't believe the Air Force is ready to outline specific actions to be taken, but I'm sure they are as interested as this committee in achieving any savings and efficiencies that might be possible.

Question. Does Air Force Systems Command follow the same fufding rules as similar organizations in the other Services?

Answer. I understand that the Services are not totally uniform in the manner in which they fund certain items like travel or other manpower functions. This is not surprising since, as the committees investigative staff report points out, they are not organized in the same way and certain functions like base support might be funded differently from service to service.

Question. Does OSD require the services to submit travel budgets by command, showing all personnel assigned (military and civilian) and all travel costs, regardless of whether it is funded in O&M, RDT&E, or industrial funds?

Why are Air Force Systems Command travel costs, when measured properly in this fashion, more than double the Air Force average?

Answer. To my knowledge, OSD does not require the services to submit travel budgets by command. Travel is financed in a variety of ways depending on the mission of the traveler. For example, a person assigned to an R&D Laboratory would probably be spending R&D money when he travels, someone working in a shipyard may spend money from an industrial fund, those traveling on other missions may spend O&M funds. While OSD does not necessarily collect this information by command, travel is certainly reviewed in the aggregate and shown by appropriation as part of the budget data submitted to Congress.

It is difficult for me to say why Air Force Systems Command travel costs are more than double the Air Force average. The Air Force budget offices would have to look at this and give you a more precise answer. I would offer, however, that some missions require more travel than others, and I would be very surprised if all commands, some of which have very different missions, had about the same travel costs.

T-33 AIRCRAFT PHASEOUT

Question. Dr. Wade, as the Department's senior official responsible for logistics, you should be aware of the Committee's interest in retiring obsolete T-33 aircraft. Both Appropriations Committees of Congress directed the Defense Department to phaseout obsolete T-33 aircraft assigned to the Air National Guard and replace then with 45 T-39 aircraft being retired, to be accomplished by the end fiscal year 1986. Dr. Wade, will the Department comply with the instructions of both Appropriations Committees of Congress? Will you meet the October 1, 1986, deadline?

Answer. While the Conference Report (99-450) states that the House and Senate agreed that the Air Force must retire Air National Guard (ANG) T-33 aircraft in fiscal year 1986 and replace them with 45 T-39 aircraft, the conferees clarified that this action is intended to provide and interim capability until such time that the Air Force budgets for and deploys a permanent replacement aircraft that fully meets the requirements of both the Active and Guard forces for electronic countermeasures training.

The Air Frorce cannot meet the deadline because it cannot fulfill ANG or Active air defense target training requirements by refurbishing ECM fitted T-39 replacement aircraft in the required time frame. Consequently, retiring all T-33s by the end of fiscal year 1986 would create an interim training vacuum rather than an interim capability.

The Air Force does not presently plan to take T-39 aircraft out of storage. The Air Force, and the National Guard Bureau, evaluated the feasibility and cost-effectiveness of providing T-39 aircraft to the ANG for ECM training purposes. It was reported to the Congress that using T-39 aircraft to replace T-33s (Active or Guard) is not economically or operationally viable due to recurring corrosion problems, wing cracks, questionable integrity of other components and costly logistics support. In addition, the life cycle cost of the T-39 exceeds that of the T-33. A copy of the report was provided to Congress on 28 February 1986.

The Air Force began phasing out Active and ANG T-33 aircraft in fiscal year 1986 and will complete their retirement in the first quarter of fiscal year 1989. The Air Force believes the most cost-effective and efficient method of providing air defense target training is by contract.

Question. What OSD official would be responsible and accountable if the Department failed to comply with the Congressional mandate?

Answer. Within the Department, the Air Force is the lead agency on this action.

Question. What instructions have you sent to the Air Force on this issue, Mr. Wade?

Answer. The instructions provided by OSD consisted of general tasking to the Air Force to be the lead agency in this matter.

LEASING AIRCRAFT

Question. The Air Force is considering increased monthly rental rates and/or early purchase of leased C-12 and C-21 aircraft.

Did the Air Force first obtain a formal legal opinion on the contractual limits over the number of hours it may fly leased C-12 and C-21 aircraft at the present fixed monthly rental rates, before requesting proposals and initiating negotiations with the contractors for a monthly utilization rate of 78 hours per aircraft?

What is the status of the negotiations and does the Air Force envision a sizable increase in the monthly rental rates as well as in the contractor logistics support rates?

Will the Air Force receive any reduction in the purchase option prices if the aircraft are used more each month? If not, why not?

Did the Air Force obtain an early buyout price for C-21s that is lower than the initial purchase option price of $2.7 million?

Was any analysis or comparison made of the buyout price with continued aircraft leasing?

Since the Air Force negotiated fixed rather than variable monthly rental rates, were fluctuations in monthly usage recognized or ignored when leases were negotiated in 1983?

What extra costs would be justified and allowable in accordance with procurement regulations, if the Air Force would be legally obliged by contract terms to amend the contract for increased utilization?

If the contracts are amended, will rental rates fluctuate in accordance with monthly utilization rates as Air Force needs?

How does the Air Force interpret the lease contract provisions for a contingency rate of 5 hours per day per aircraft for 30 days each year? Would those provisions apply to leased C-12 and C-21 aircraft participating in DOD annual development readiness exercises? What other special circumstances might they apply without the Air Force being obliged to pay additional rent for exceeding an average utilization rate of 56 hours per month per aircraft?

How should the Air Force determine the average monthly utilization rate per aircraft under the contracts? Month-by-month for a full calendar or fiscal year, and should it be an overall average for the entire fleet of each type aircraft or a separate average for each organization which possess them?

Has the Air Force developed a plan that will permit it to analyze and select the option most favorable to the Government from a cost and performance standpoint, when the initial contract lease periods expire for these aircraft?

Has the Air Force identified critical dates and lead time that will allow for timely consideration of all options?

Do the DOD approved wartime readiness requirements for operational support aircraft in the Air Force justify the retention by the Air Force of its fleet of 120 leased aircraft, both as to total numbers of each and the mix?

If not, what are DOD's views on reducing the number excess to requirements by either a partial termination of the lease or waiting until some 5 year lease periods expire?

Answer. The questions on these two pages do not address procurement policy. They are questions concerning details of the contracts or contract modifications for the Air Force's lease of C-12 and C-21 aircraft.

We are working with the Air Staff to obtain answers. Because the detailed information requested is not available in the Pentagon, we are unable to meet the 14 May 86 suspense date. Responses will be furnished in a few weeks.

Air Force is also responding to questions from the Surveys and Investigations Staff concerning the same contracts.

[CLERK'S NOTE.—The answers to the above questions arrived too late to be printed at this point. They will be printed at the end of this volume. See page 754.]

CONTRACTED ADVISORY AND ASSISTANCE SERVICES

Question. Mr. Wade, this Committee has been very interested for several years in the issue of Contracted Advisory and Assistance Services. Last year's Committee report set forth some of the significant events related to the CAAS issue and urged a revision of the Department's budget exhibits to identify the costs associated with contract support services better. The following language appeared in the Committee's report (p. 85): "The Committee asks the Department to work with the House and Senate Appropriations and Armed Services Committees and with the General Accounting Office to develop complete and accurate definitions as well as an accounting procedure to track the costs associated with CSS/CAAS."

In addition, the 1986 authorization act required the Department to issue regulations which describe contracted advisory and assistance services and which CAAS are performed in direct support of a weapon system.

The regulations were issued on January 27, 1986 (number 4205.2). We do not believe the Department made a sufficient effort to work with the Committee in developing the CAAS definitions. Partially as a result of this lack of cooperation, it appears the new CAAS regulations may not adequately address congressional concerns with CAAS. Specifically, the scope of the exemptions from reporting may actually provide the Congress with less visibility of CAAS than it currently gets from existing budget exhibits.

Can you explain why a greater effort was not made to comply with the Committee's desire for congressional cooperation on developing CAAS definitions?

Answer. A considerable effort was made. Several years ago, the Department undertook to improve the management of CAAS. It created the position of Director, DOD Studies and Management Support Services (since renamed Director, Contracted Advisory Assistance Services (CAAS)); prepared a Master Plan for improving the management of CAAS; and prepared a new DOD Directive on CAAS management. The Department kept committee staffs and individual staff members informed of our efforts, including sharing both the drafts and final versions of the Master Plan, definitions, and directive. In 1985 we met separately or collectively at least a half dozen times with individuals or committee staffs on: the CAAS issue; implications of congressionally-imposed CAAS limitations; new definitions of CAAS; reformatted budget exhibit; and, other management improvements procedures. Several DOD principals met on the CAAS issue with three Congressmen and their staffs. There were innumerable telephone conversations with staff members of the HASC, SASC, and Senator Mattingly's staff. In addition, our efforts and work were shared and discussed on several occasions with the GAO, the House S&I staff, OMB, the Office of Federal Procurement Policy (OFPP), and two professional associations representing management consultants: the Professional Services

Council (PSC) and the Association of Management Consulting Firms (ACME). Lastly, several years ago the Executive Branch, through the aegis of the Cabinet Council on Management and Administration (CCMA), undertook an in-depth review of the CAAS issue, resulting in a series of recommendations approved by the President which currently are being implemented. The Department participated in the CCMA work and follow-on effort, providing them with expertise, draft working papers, and definitions.

A a result of these consultations, the Department issued a DOD Directive on CAAS. The directive provides sound and consistent definitions for CAAS and its four components (Individual Experts and Consultants; Studies, Analyses, and Evalutions; Management Support Services; and Engineering and Technical Services) and incorporates a comprehensive summary of the policies and procedures, both old and new, for managing CAAS. It requires: (a) annual plans justifying CAAS requirements; (b) annual reports summarizing results; (c) individual evaluations of the services provided and contractors' performance; (d) use of DOD Components' accounting systems to record CAAS obligations; (e) an annual budget exhibit reconcilable with the annual plans; (f) supporting data to permit comparison of planned and actual obligations; (g) identifying and accounting for all CAAS, whether in a separate contract or as part of a non-CAAS, whether in a separate contract or as part of a non-CAAS contract; and (h) establishment of DOD Component CAAS Directors at the flag or SES level with the authority to approve or disapprove CAAS requests and to be responsible for all CAAS activities in their respective Components. The directive was signed on January 27, 1986, and implementation is proceeding.

Question. For Category A (Individual Experts and Consultants) can you tell the Committee why the approval procedures do not apply to the following:

(a) Experts and consultants in positions in field organizations below the major DOD Component headquarters level;

(b) Physicians, dentists and health professions;

(c) Veterinarians;

(d) Lecturers; and

(e) Auxiliary chaplains?

Answer. What is meant is that such appointments do not have to be approved at the OSD level. Such appointments have to be made, procured and approved at the requiring activity level in accordance with the procedures in Enclosure 2 of DOD Directive 4205.2, the FAR, DFAR, and Title 5, U.S.C. 3109 (6).

Question. Category B (Studies, Analyses and Evaluations) also contains several exemptions, most notably those associated with weapon or equipment development. Also excluded are "research on theoretical mathematics and fundamental physical, biological, social, or psychological phenomena unrelated to particular issues or systems." Please comment on the reasons for these exclusions.

Answer. "Research on theoretical mathematics and fundamental physical, biological, social or psychological phenomena unrelated to particular issues or systems" was excluded because: these are basic research activities where knowledge is sought for the sake of knowledge and therefore do not constitute advisory and assistance services. Basic research activities of the Department of Defense are given careful Congressional scrutiny annually through the authorization and appropriations process and additional scrutiny via CAAS was not believed necessary. Studies, Analysis and Evaluation (SAE) associated with weapon or equipment development were excluded because: those that are so associated, are so absolutely integral and substantial to the design, development and production of weapons systems, that without them there would be no weapon systems. Maybe even more so than basic research, weapons systems programs receive intense annual review and scrutiny by Congress. While these activities may be exempt from the reporting provisions of the CAAS Directive, they are procured, managed and controlled in accordance with statutes and regulations, such as the Competition in Contracting Act, the Armed Services Procurement Regulations, and the Federal Acquisition Regulation.

Question. The Department's 1986 estimate for consultants, studies and analyses, management support contracts, and contract systems engineering and contract engineering technical services (as submitted in the PB 21 and PB 25 budget exhibit) was $1,376,687,000.

Do you have any estimate on what these costs would be if defined in accordance with the new directive?

By excluding CAAS of engineering and contract research, development, test and evaluation of weapon systems before final acceptance of the systems, isn't it likely the new directive will so reduce CAAS reporting estimates so as to make them virtually meaningless to Congress?

In effect, won't this new directive, if implemented, result in less visibility of contracted advisory and assistance services and less congressional oversight—exactly the opposite of the desired congressional goal?

Answer. The DOD FY 1987 Budget special analysis, known as the PB-27, for Contract Support Services (CSS) and Contracted Advisory and Assistance Services (CAAS), compiled on the basis of the new definitions, shows a planned total for FY 87 of $3.332 billion for CAAS. This rises by $1.199 billion to $4.531 billion if systems engineering (CSS), which is excluded from the DOD Directive, is added. The comparable figures for FY 86, as contained in the PB-27, are $3.101B; $1.042B (for systems engineering); and $4.143B total. Rather than showing less visibility, the contrary has happened. By including the activities and functions of Federally Funded Research and Development Centers (FFRDCs) and Information Technology CAAS—both of which could have been distributed among the four CAAS categories rather than be shown separately, plus new, clear and detailed definitions—the amount of CAAS reported has increased by 142 percent (excluding systems engineering which is excluded in the Directive).

CONTRACTOR SUPPORT SERVICES

Question. The fiscal year 1985 Authorization Act placed a $1.3 billion spending limitation on studies and analyses, consultants, management support contracts, and technical engineering. Are there any instances where this limitation adversely affected readiness? What contracts, if any, were cancelled after initiation due to this spending limitation?

Answer. The Secretary of Defense specifically asked all the Components of the Department to report any adverse impact on performing operational missions as a result of the limitation. All components reported that there had been no direct impact on the performance of current operational missions resulting from the administration of the limitation. However, the Navy did report that without the limitation, it would have funded approximately $80 million of additional contract support services. The major share of the effort would have related to weapon systems management and engineering support which would not have an impact on near-term readiness. The effect of the administration of the limitation was not to award contracts for certain deferrable efforts or award contracts for reduced levels of effort rather than cancel contracts. Disruptive and costly cancellations of contracts was avoided by the Navy through the imposition of a early freeze on contract awards until the specific impact of the limitation could be ascertained.

Question. Due to the spending limitation of $1.3 billion for studies and analyses, management support contracts, and technical engineering contracts, the Navy had difficulty executing a certain number of contracts in fiscal year 1985. At the end of 1984, it became obvious to the Navy that they would be short about $400,000,000 in contract monies due to this limitation. At the Navy operations and maintenance hearing on March 27, 1985, the Navy informed this Committee that due to "rescrubbing" the data the Navy's $400,000,000 problem became an $80,000,000 problem.

What did this "rescrubbing" entail to the the Navy from a deficit of $400,000,000 to a deficit of $80,000,000? Was there further "rescrubbing" of the data to further reduce this $80,000,000 shortfall?

Answer. When the limitation of spending was initially promulgated to Department of the Navy program executing commands, they attempted to quickly assess the magnitude of the problem. Using their contract planning systems, they developed preliminary estimates that would have required several hundred million dollars of additional limitation. In view of the legal and program execution ramifications, the Department subsequently conducted an in-depth review of requirements. That review resulted in a determination that the Department of the Navy shortfall was in fact $80 million, which included $30 million in the operation and maintenance accounts and $50 million in procurement and research accounts. The earlier preliminary estimate of several hundred million dollars had included efforts which were not within the scope of contractor support services as reported to Congress in the PB-21 and PB-25 budget exhibits, which were the basis of the statutory limitation. For instance, efforts performed by Federally Financed Research and Development Centers (FFRDC's), intelligence support, and certain ADP efforts were not included in the PB-21 and PB-25. Another factor which led to the reduced shortfall was that the preliminary estimates had included planned expenditures of prior year appropriated funds, whereas the limitation applied only to FY 1985 appropriated funds.

Question. What was the total FY 1985 funding shortfall for the Navy for studies and analyses, consultants, management support contracts and engineering services?

Answer. Eighty million dollars.

Question. Did the Navy have to cancel any contracts due to this funding shortfall?

Answer. No. The effect of the administration of the limitation was not to award contracts for certain deferrable efforts or award contracts for reduced levels of effort rather than cancel contracts. Disruptive and costly concellations of contracts were avoided through the imposition of an early freeze on contract awards until the specific impact of the limitation could be ascertained.

Question. Since the $1.3 billion spending limitation in the fiscal year 1985 Authorization Act was a DoD-wide limitation, the Services and Defense Agencies each had a portion of that limitation. Is this correct?

Of the $1.3 billion limitation, what was the limitation assigned for each Service and Defense Agency?

The Committee understands that due to the Navy's difficulty in executing their fiscal year program, limitations for the Services and Defense Agencies were reevaluated and reset. Please provide a description and Appropriation tracking of how this reevaluation and resetting of the Services and Defense Agencies limitations was accomplished.

Why is it that none of the other Services or Defense Agencies experienced a funding shortfall for their studies and analyses, consultants, management support contracts, or technical engineering services?

Answer. Yes, the limitation was established as a DoD-wide limitation and as such it was allocated to the various components by the Comptroller of the Department. In order to provide maximum flexibility to each component in administering the limitation, the limitation allocated to each component was a single amount although it was usually a combination of a variety of estimates for the various appropriations in which the component reflected estimates for the contractual services covered by the limitation. The final distribution of the limitation is as follows:

Obligation Limitation on Consulting and Related Services in Accordance with Section 308 Defense Authorization Act, FY 1985

Components:	*Millions*
Army	$123.700
Navy	653.496
Air Force	413.775
Defense Agencies	(111.029)
Washington Headquarters Services*	73.992
Uniformed Services University of The Health Sciences	.016
Defense Mapping Agency	.200
Defense Nuclear Agency	.020
Defense Communications Agency	22.855
Defense Communications Agency	3.623
Defense Audiovisual Agency	.021
Defense Strategic Initiatives	1.315
Defense Advanced Research Projects Agency	.010

Organization of the Joint Chiefs of Staff	8.977
Total Obligation Limits	1,302.000

*Includes combined totals of O&M and RDT&E for the Office of the Secretary of Defense, CHAMPUS, Overseas Dependent Education, Medical Information Systems and the Office of Econmomic Adjustment.

The initial allocation of the limitation was based directly on the components estimates as reflected in the two budget exhibits which were the basis for the total limitation amount. It was possible to increase the Navy limitation as a result of changed requirement on the part of other components which did not require the full amount of their initial allocations. The final Navy allocation of $653.5 million represented an increase $15.6 million over its initial allocation. The Air Force was also increased by $5.3 million over its initial allocation for operational engineering support. These increases were accommodated by decreases of $6.0 million in the Army and $14.9 million in Defense Agencies. Within the Defense Agencies an increase of $1.0 million was provided to the Organization of the Joint Chiefs of Staff and $1.3 million to the Strategic Defense Initiatives Organization.

Since the initial limitations were established on the components estimates of requirements in their budget exhibits, the only basis for shortfalls in limitations was understatement of estimates in the budget exhibits through definitional misinterpetations and administrative errors in preparing the budget exhibits.

Question. Due to the Department's difficulty of operating under the $1.3 billion limitation for studies and analyses, consultants, management support services and engineering services, no limitation was applied for fiscal year 1986. However, if the $1.3 billion was an inappropriate funding level, why did the Department submit the PB 21 & 25 providing essentially an inflation figure over the fiscal year 1985 level? The course of action taken in submitting the fiscal year 1986 PB 21 & 25, implies that the 1985 limitation was not in error and no significant damage was done by imposing the limitation in 1985. Will the Navy be faced with a funding shortfall in fiscal year 1986 as they were in 1985?

What is the breakout for each Service and Defense Agency of the fiscal year 1986 and 1987 budgeted amounts for contracts studies and analyses, consultants management support services and engineering services?

Answer. The perception that the Department had great difficulty in operating under the $1.3 billion limitation is overstated. This erroneous impression seems to have arisen through the prudent action on the part of the Navy in imposing a contractual freeze in order to assess the impact of this legal limitation. That action generated a considerable volume of contractor employee letters to the Congress. Unlike the other components, the Navy did not have sufficient visibility in its accounting system to establish controls to assure positive control over these specific category of costs which has not been previously subjected to such a legal limitation. When those controls were satisfactorily in place, the Navy proceeded to execute a program with no direct adverse impact on its current operational assigned mission. Since the Navy has established central control and provided accounting visibility for these cost, it will not experience similar problems in FY 1986. The Department's estimates for FY 1986 were submitted allowing only price growth over the FY 1985 level because of a recognition that through better management of these contractual services, it should be possible to achieve savings through the elimination of marginal and duplicative tasks and achieving economies through refining requirements and achieving more competition.

FISCAL YEAR 1987, COMBINED PB–27'S

[In millions of dollars]

	Army	Navy	Air Force	Def Agencies	Total
Contracted Advisory and Assistance Services (CAAS):					
Individual Experts and Consultants	1.4	1.5	0.3	4.6	7.8
Studies, Analyses and Evaluation	19.3	7.8	26.3	182.3	235.6
Management Support	55.6	471.5	43.9	52.8	623.6
Engineering and Technical	81.0	190.6	69.7	....	341.3
Information Technology	224.4	187.4	325.0	151.6	888.4
Total CAAS	381.7	858.8	465.2	391.3	2,096.7
Other Contract Support Services (CSS):					
System Engineering	10.2	819.6	320.3	48.9	1,199.1
Federally Funded R&D Centers	46.9	370.9	536.3	280.6	1,234.7
Total CAAS/CSS	438.8	2,049.3	1,321.8	720.8	4,530.7
PB–27 GENERIC	(262.6)	(304.0	(444.4)	(720.8)	(1,731.8)
PB–27 WEPS	(176.2)	(1,745.4	877.3)	(—)	(2,798.9)

Note.—Some totals may not add due to rounding.

FISCAL YEAR 1986 COMBINED PB–27'S

[In millions of dollars]

	Army	Navy	Air Force	Defense Agencies	Total
Contracted Advisory and Assistance Services (CAAS):					
Individual Experts and Consultants	1.3	2.9	0.3	3.7	8.2
Studies, Analyses and Evaluation	16.9	7.3	26.2	128.0	178.4
Management Support	53.5	449.8	42.0	47.1	592.3
Engineering and Technical	73.5	200.9	66.7	....	341.0
Information Technology	193.6	164.9	319.7	137.6	815.8
Total CAAS	338.6	825.8	454.9	316.4	1,935.7
Other Contract Support Services (CSS):					
Systems Engineering	6.8	710.3	307.9	16.9	1,041.9
Federally Funded R&D Centers	44.0	356.8	510.5	253.9	1,165.2
Total CAAS/CSS	389.4	1,892.9	1,273.3	587.2	4,142.8
PB–27 GENERIC	(232.0)	(269.1)	(434.9)	(587.2)	(1,523.1)
PB–27 WEPS	(157.4)	(1,623.8)	(838.4)	(0)	(2,619.7)

Note.—Some totals may not add due to rounding.

FISCAL YEAR 1985, COMBINED PB–27'S

[In millions of dollars]

	Army	Navy	Air Force	Defense Agencies	Total
Contracted Advisory and Assistance Services (CAAS):					
Individual Experts and Consultants	0.7	0.9	0.2	2.1	3.8
Studies, Analyses and Evaluation	13.4	8.6	22.3	101.5	145.8
Management Support	34.3	421.2	28.2	39.8	523.5

FISCAL YEAR 1985, COMBINED PB-27'S—Continued

[In millions of dollars]

	Army	Navy	Air Force	Defense Agencies	Total
Engineering and Technical	49.4	195.5	58.7		3.0
Information Technology	164.5	140.0	312.5	106.5	723.6
Total CAAS	262.3	766.2	421.9	249.9	1,700.1
Other Contract Support Services (CSS):					
Systems Engineering	3.4	750.0	257.5	1.5	1,012.5
Federally Funded R&D Centers	38.9	295.5	478.5	203.1	1,016.0
Total CAAS/CSS	304.6	1,811.7	1,157.9	454.5	3,728.6
PB-27 GENERIC	(190.5)	(245.5)	(419.7)	(454.5)	(1,310.1)
PB-27 WEPS	(114.1)	1,566.1)	(738.2)	(0)	(2,418.4)

Note.—Some totals may not add due to rounding.

CONTRACTING-OUT

Question. Please provide the number of military and civilian spaces that were converted to contract effort by the Army, Navy, Marine Corps, Air Force, and Defense Agencies.

Please provide budgeted and actual data for fiscal years 1986, 1987, and 1988.

Please provide actual data for fiscal years 1982, 1983, 1984, and 1985.

Please provide information on the appropriations which the spaces were converted from and the appropriation to which the contract effort is charged to (RDT&E, O&M, Procurement, and other).

Answer. The actual number of military and civilian spaces converted to contract for fiscal years 1982, 1983, 1984 and 1985 are displayed in the chart below. Budget figures are not available as the Department has not been budgeting for anticipated contracting out savings for the past few years at the request of the House Armed Services Committee. The impact of actual conversions are affected in the budget after the results of the study are known.

Military personnel are paid out of the military pay appropriation. Civilian personnel are paid out of the appropriation consistent with the work they perform. With an exception for military personnel, the appropriations don't change upon conversion to contract. Dollars are reprogrammed from the civilian pay portion of the appropriation to the other contract services portion. When military personnel are involved, additional dollars may be required for the appropriation consistent with the work performed, as the military spaces are retained by the Services to meet other critical needs.

ACTUAL SPACES CONVERTED TO CONTRACT

	Civilian	Military
1982:		
Army	1,184	190
Navy	889	70
MC	17	0
AF	719	54

ACTUAL SPACES CONVERTED TO CONTRACT—Continued

	Civilian	Military
Other	0	0
DoD	2,809	314
1983:		
Army	1,175	269
Navy	3,256	382
MC	0	0
AF	232	91
Other	404	115
DoD	5,067	857
1984:		
Army	1,051	252
Navy	1,323	78
MC	18	1
AF	723	457
Other	0	0
DoD	3,115	788
1985:		
Army	1,763	693
Navy	415	869
MC	156	5
AF	690	190
Other	0	0
DoD	3,024	1757

CONSULTANTS, STUDIES, AND ANALYSES

Question. What is the total amount being requested in fiscal year 1987 for consultants, studies and analyses? Please provide this information by component and appropriation, broken out as follows: experts and consultants, studies, professional management services, contract engineering technical services, and total. How does this compare to fiscal 1985 and 1986 funding levels? Please provide a comparision broken out as defined in the previous question.

Answer. In compliance with Congressional direction in Section 918 of the FY 1986 Defense Authorization Act to provide for improved definitions of Contract Advisory and Assistance Services (CAAS) and provide estimates separately for weapon systems support, new budget exhibits have been submitted in support of the FY 1987 Presidents budget entitled Contract Support Services and designated the PB-27. This exhibit replaces the budget exhibits PB-21 on Consultants, Studies and Analyses and Management Support and the PB-25 on Contract Engineering Services. The PB-27 budget exhibit in total presents a much larger set of estimates than shown previously in the superseded PB-21 and PB-25 budget exhibits. This is due to inclusion of contract services for Information Technology Systems (ITS) and contractural efforts provided by Federally Funded Research and Development Centers (FFRDC) which were not included in the PB-21 and PB-25 budget exhibits. Additionally, the detailed definitions of CAAS provided in DoD Directive 4205.2 have clarified the types of efforts required for inclusion in the CAAS budget estimates. A summary of the PB-27 Budget Exhibits follows:

TOTAL DEPARTMENT OF DEFENSE, COMBINED PB-27'S

[In millions of dollars]

	FY 1985	FY 1986	FY 1987
Contracted Advisory and Assistance Services (CAAS):			
Individual Experts and Consultants	3.8	8.2	7.8
Studies, Analyses and Evaluation	145.8	178.4	235.6
Management Support	523.5	592.3	623.6
Engineering and Technical	303.4	341.0	341.3
Information Technology	723.6	815.8	888.4
Total CAAS	1,700.1	1,935.7	2,096.7
Other Contract Support Services (CSS):			
Systems Engineering	1,012.5	1,041.9	1,199.1
Federally Funded R&D Centers	1,016.0	1,165.2	1,234.7
Total CAAS/CSS PB-27 Estimates	3,728.6	4,142.8	4,530.7
PB-27 GENERIC	(1,310.1)	(1,523.1)	(1,731.8)
PB-27 WEPS	(2,418.4)	(2,619.7)	(2,798.9)

Note.—Some Totals may not add due to rounding.

COMPARISON

	FY 1987 Estimate Compared to	
	FY 1985	FY 1986
Individual Experts and Consultants	+4.0	−0.4
Studies, Analyses and Evaluation	+89.8	+57.2
Management Support	+100.1	+31.3
Engineering and Technical	+37.9	+0.3
Information Technology	+164.8	+72.6
Total CAAS	+396.6	+161.0
Systems Engineering	+186.6	+157.2
Federally Funded R&D Centers	+218.7	+69.5
Total PB-27	+802.1	+387.9

Note.—Some totals may not add due to rounding.

CONTRACT SUPPORT SERVICES (CSS) BY APPROPRIATION

[In millions of dollars]

	FY 1985	FY 1986	FT 1987
PB-27 GENERIC			
Army:			
Operation and Maintenance, Army	170.9	210.5	230.9
Operation and Maintenance, Army Reserve	5.0	.8	9.9
RDT&E, Army	12.3	17.7	17.9
Operation and Maintenance, Army National Guard	2.4	3.0	3.9
Total Army	190.5	232.0	262.6
Navy:			
Operation and Maintence, Navy	158.2	177.3	204.7
Operation and Maintenance, Navy Reserve	.4	.8	1.0
Operation and Maintenance, Marine Corps	29.5	30.3	28.2

CONTRACT SUPPORT SERVICES (CSS) BY APPROPRIATION—Continued

[In millions of dollars]

	FY 1985	FY 1986	FT 1987
Operation and Maintenance, Marine Corps Reserve	.4	.5	.5
Family Housing, Navy	.9	.7	1.0
Military Construction, Navy	1.5	1.9	1.9
RDT&E, Navy	54.5	57.7	66.6
Total Navy	245.5	269.1	304.0
Air Force:			
Aircraft Procurement, Air Force	3.8	3.3	3.4
Missile Procurement, Air Force	24.6	25.4	26.6
Other Procurement, Air Force	58.0	59.4	60.9
Operation and Maintenance, Air Force	299.5	310.7	302.7
RDT&E, Air Force	33.7	36.1	50.8
Operation and Maintenance, Air Force Reserve	([1])	([1])	([1])
Total Air Force	419.7	434.9	444.4
Defense Agencies:			
Operation and Maintenance, Defense Agencies	153.5	186.8	203.0
RDT&E, Defense Agencies	301.0	400.4	517.8
Total Defense Agencies	454.5	587.2	720.8
Total GENERIC	1,310.1	1,523.1	1,731.8
PB–27 WEPS			
Army:			
Operation and Maintenance, Army	69.7	103.4	116.3
Procurement, Aircraft, Army	.1	.1	.1
Missile Procurement, Army	4.7	8.9	9.0
Procurement Ammunition, Army		.8	.7
Procurement, Wheeled, and Tracked Vehicles	39.7	44.1	49.9
Total Army	114.1	157.4	176.2
Navy:			
Operation and Maintenance, Navy	772.7	772.6	831.7
Operation and Maintenance, Navy Reserve	10.7	12.2	14.1
Operation and Maintenance, Marine Corps	10.6	7.1	7.4
Aircraft Procurement, Navy	60.8	52.3	61.4
Weapons Procurement, Navy	29.6	36.3	43.4
Shipbuilding and Conversions, Navy	403.2	416.3	453.4
Other Procurement, Navy	33.0	33.9	39.6
Procurement, Marine Corps	1.5	1.0	.8
RDT&E, Navy	244.1	292.2	293.7
Total Navy	1,566.2	1,623.8	1,745.4
Air Force:			
Operation and Maintenanace, Air Force	373.2	428.5	447.8
RDT&E, Air Force	358.8	402.0	421.3
Operation and Maintenance, Air Force Reserve	5.1	5.5	5.7
Operation and Maintenance, Air National Guard	1.2	2.5	2.6
Total Air Force	738.2	838.4	877.3
Defense Agencies: None			
Total WEPS	2,418.4	2,619.7	2.798.9
Combined GENERIC/WEPS Totals	3,728.6	4,142.8	4.530.7

[1] Less than 0.1 million.

Note.—Some Columns may not add due to rounding.

AIR FORCE BUSINESS RESEARCH MANAGEMENT CENTER

Question. For fiscal years 1983 through 1987 what are the total amounts budgeted for the studies done for the Air Force Business Research Center? Please provide the fiscal year 1983 through 1985 budgeted and actual data, and fiscal year 1986 and 1987 estimated data.

Answer.

[in thousands of dollars]

	FY83	FY84	FY85	FY86	FY87
Budgeted	360.0	580.0	656.0	1227.0	642.7
Actual	[1] 544.0	545.5	[1] 1080.9		

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[1] Additional funding provided by HQ Air University.

Question. Please provide a list by title and dollar amounts for all these projects that are contracted in fiscal year 1985 and 1986.

Answer.

Fiscal year 1985:	
Data Collection System for Estimating Software Development Cost	$154,000
Ranking Class IV Aircraft and Missile Modifications	49,799
Government Software Quality Assurance	154,745
Improvement of Computer Software Quality Through Software Automated Tools	125,764
Competition Strategy Decision Support Model	198,895
Quantitative Pricing Methods for Warranties in AF Contracts	190,063
Cost Effectiveness Trade-Offs in Software Support Environment Standardization	85,279
Decision Rules for Enhanced Breakout	51,000
In-Plant Technical Support of Software Contract Administration	51,390
Development of a Computer Handbook for Contracting Procedures	20,000
Fiscal year 1986: Major Systems Source Selection Training Evaluation	46,367

Question. What types of projects will be contracted in fiscal year 1987?

Answer. The Air Force Business Research Management Center will contract in FY87 for projects similar to those pursued in the past. Emphasis will be on research to:

a. Improve the acquisition process
b. Provide tools to assist those involved in the process
c. Investigate competition related issues.

NAVY PERSONAL SERVICES CONTRACTS

Question. Total amount of personal service contracts for the Navy Systems Commands. Please provide fiscal year 1982 through 1985 actuals and fiscal year 1986 through 1987 estimates.

Answer. The use of personal services contracts is strongly discouraged within the Naval Systems Commands. Data available in the Department of the Navy procurement data system indicates that no personal services contracts have been entered into between FY 1982 and FY 1985. None are planned in FY 1986 or FY 1987.

ARMY PERSONAL SERVICE CONTRACT EXPENDITURES

Question. Please provide fiscal year 1982 through 1985 actuals and fiscal year 1986 through 1987 estimates for personal service contracts for the Army Systems Commands.

Answer. The total amount of personal service contracts for the Army in fiscal years 1982 through 1985 are as follows: 1982-$734,000, 1983-$715,000, 1984-$567,000, and 1985-$659,000. These are actual expenditures for personal service contracts. The Army estimates that in 1986 it will expend $967,000 and in 1987 it will expend $970,000 for personal service contracts.

The total amount of personal service contracts for the Army systems commands (Major Subordinate Commands of the Army Material Command) for fiscal years 1982 through 1985 are as follows: 1982-$28,000, 1983-$79,000, 1984-$0, and 1985-$92,000. The estimates for 1986 and 1987 are $60,000 each year for personal service contracts.

Over 80 percent of the total Army expenditures for personal service contracts were obligated by Health Services Command in each of the fiscal years listed above.

FCRC FUNDING

Question. What is the FCRC funding for fiscal year 1984 and 1985 actuals and 1986, 1987, 1988 estimates? Please provide this information by component (Army, Navy, Marine Corps, Air Force, DARPA, DMA, DNA, NSA, OSD/OJCS, DIA, DDT&E and total DoD) and Appropriation (RDT&E, Procurement, Other).

Answer. In a paperwork reduction effort to reduce the number of exhibits submitted with the Department of Defense Budget, the document that requested this information from the Services and Defense Agencies was deleted as a reporting requirement. This information was assembled by special effort about one year ago for your committee through the General Accounting Office. If the information is required again a special reporting requirement will be placed on the Services and Defense Agencies.

[CLERK'S NOTE.—End of questions submitted for the record.]

Mr. CHAPPELL. Dr. Wade, we thank you and your staff very much for your very fine testimony. Nice to have you with us.

The subcommittee will stand in recess until 1:30 p.m. this afternoon.

THURSDAY, APRIL 10, 1986.

SPECIAL OPERATIONS FORCES (SOF)

WITNESSES

HONORABLE DONALD C. LATHAM, ASSISTANT SECRETARY OF DEFENSE, COMMAND, CONTROL, COMMUNICATIONS AND INTELLIGENCE

MAJOR GENERAL W.H. RICE, USMC, DIRECTOR, JOINT SPECIAL OPERATIONS AGENCY, ORGANIZATION OF THE JOINT CHIEFS OF STAFF

MAJOR GENERAL H. NORMAN SCHWARZKOPF, ASSISTANT DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS, DEPARTMENT OF THE ARMY

CAPTAIN THEODORE E. GRABOWSKY, HEAD OF SPECIAL WARFARE BRANCH, DEPUTY CHIEF NAVAL OPERATIONS (SURFACE WARFARE), DEPARTMENT OF THE NAVY

BRIGADIER GENERAL ROYAL N. MOORE, JR., ASSISTANT CHIEF OF STAFF FOR AVIATION, HEADQUARTERS, UNITED STATES MARINE CORPS

MAJOR GENERAL HAROLD J.M. WILLIAMS DIRECTOR OF OPERATIONS, DEPUTY CHIEF OF STAFF FOR PLANS AND OPERATIONS, DEPARTMENT OF THE AIR FORCE

INTRODUCTION

Mr. CHAPPELL. The committee will please come to order.

The committee will continue its hearings on the fiscal year 1987 Department of Defene budget request with a hearing on the special operations forces of the Department of Defense.

The primary witnesses are Hon. Donald C. Latham, who is Assistant Secretary of Defense for Command, Control, Communications, and Intelligence; and Major General W. H. Rice of the Organization of the Joint Chiefs of Staff.

Mr. Secretary, we look forward once again to your always expert testimony. I know that we can rely on you to help us strengthen our special operations forces in the same way that we have relied on the outstanding support of Mr. Noel Koch in OSD who has, in the past, testified for DOD and worked closely with this committee for some time.

The basis for most of today's hearing will be a recent committee Surveys and Investigations staff report entitled "Special Operations Forces of the Department of Defense." This classified report has been made available to DOD to prepare for this hearing. I would ask that Department review the report and provide a declassified version of it to the committee so that it may be inserted in the record.

By a motion passed in open session, this hearing will be held in Executive Session since we will be discussing classified information.

Mr. Secretary, everbody on this side of the table is appropriately cleared, and I would request that you confirm the same for your supporting personnel.

Mr. LATHAM. Yes, sir.

Mr. CHAPPELL. I would further comment that although today's hearing is closed, we are not in a special access session. Therefore, I would ask that certain senstive matters that the Members may wish to address involving U.S. counter-terrorism capabilities be held over until a separate hearing scheduled later this month.

Since we have only a short time today to review your request for ——— in fiscal year 1987, I ask that you provide a brief summary of your prepared statement which will be placed in the record, after which we will proceed with questions for you as well as military service representatives which were requested to be here today as supporting witnesses.

You may proceed.

OPENING STATEMENT OF MR. LATHAM

Mr. LATHAM. Thank you, Mr. Chairman.

I appreciate very much the opportunity to discuss the status of the special operations forces and plans that we have in that area. My being here is indicative of my oversight responsibility in the area of special forces and counterterrorism for resources and as a member of the Defense Resources Board as the advocate for this area.

As you mentioned, I have a prepared statement which we would like to have inserted in the record, and in the interest of time, I will just touch on a few points of interest.

The airlift requirements report and certification by the Secretary have recently been submitted to the Congress, and we are prepared today to discuss that. We have adjusted the funds to fund those forces in that airlift report.

In the area of readiness, there has been steady progress over the past year, and since Secretary Weinberger's review in November of 1985, there has been dramatic improvement in this area of readiness. ———.

In my statement, we have provided updated charts for Army, Navy, and Air Force readiness on all units—Active, National Guard and Reserve.

Regarding command and control, there is a report in preparation in the Department at this time, and we hope to forward it to Congress. I can't give you a date, but I would hope it to be in the next couple of weeks or so.

With me is Major General W.H. Rice, United States Marine Corps, and Director, Joint Special Operations Agency, Office of Joint Chiefs of Staff; Major General Schwarzkopf, United States Army, and Assistant Deputy Chief of Staff for Operations and Plans, Department of the Army; Captain Theodore E. Grabowsky, United States Navy, Head of Special Warfare Branch, and Deputy Chief, Naval Operations (Surface Warfare), Department of the Navy; Brigadier General Royal N. Moore, Jr., United States Marine Corps, and Assistant Chief of Staff for Aviation, Headquarters, United States Marine Corps; and Major General Harold J. M. Williams, United States Air Force, and Director of Operations, Deputy Chief of Staff for Plans and Operations, Department of the Air Force.

With that short introduction, I am prepared to take your questions.

[The statement of Mr. Latham follows:]

STATEMENT BY DONALD C. LATHAM

OVERVIEW OF SPECIAL OPERATIONS

A. INTRODUCTION

MR. CHAIRMAN, WE APPRECIATE THIS OPPORTUNITY TO ADDRESS THE SUBCOMMITTEE ON THE STATUS OF AND PLANS FOR OUR SPECIAL OPERATIONS FORCES (SOF). I HAVE APPEARED BEFORE YOU MANY TIMES WITH REGARD TO OUR C^3 AND I PROGRAMS.

MY RESPONSIBILITIES IN THE DEPARTMENT OF DEFENSE ALSO INCLUDE RESOURCE OVERSIGHT RELATED TO SPECIAL OPERATIONS FORCES AND COUNTERTERRORISM. IN ADDITION, AS A MEMBER OF THE DEFENSE RESOURCES BOARD, I AM RESPONSIBLE FOR THE SOF RESOURCE ISSUES IN THE PLANNING, PROGRAMMING AND BUDGETING SYSTEM (PPBS) WITHIN THE DEPARTMENT.

IN THIS STATEMENT FOR THE RECORD, WE HAVE ATTEMPTED TO PRESENT AN OVERVIEW OF THE SOF BUDGET REQUEST FOR FY1987. WE HAVE ALSO ADDRESSED THE ISSUES OF INTEREST TO THE SUBCOMMITTEE, PARTICULARLY THOSE MOST IMPORTANT ISSUES RAISED BY THE SURVEYS AND INVESTIGATIONS STAFF IN ITS RECENT REPORT TO YOU, AND WITH SPECIFIC EMPHASIS ON OUR AIRLIFT REQUIREMENTS. WE WILL ALSO DISCUSS THE SECRETARY'S PROGRAM FOR THE ENHANCEMENT OF OUR SPECIAL OPERATIONS FORCES, WHICH INCLUDES FORCE STRUCTURE, READINESS, SUSTAINABILITY AND MODERNIZATION. IN THE INTEREST OF TIME, WE ASK THAT THIS STATEMENT BE ENTERED INTO THE RECORD AND I WILL PRESENT A SHORT ORAL SUMMARY, AFTER WHICH WE WILL BE PREPARED TO ANSWER YOUR QUESTIONS.

WITH ME TODAY ARE MAJOR GENERAL RICE, THE DIRECTOR OF THE JOINT SPECIAL OPERATIONS AGENCY; MAJOR GENERAL SCHWARZKOPF REPRESENTING THE ARMY; CAPTAIN GRABOWSKY REPRESENTING THE NAVY; BRIGADIER GENERAL MOORE, JR. REPRESENTING THE MARINE CORPS, AND MAJOR GENERAL WILLIAMS REPRESENTING THE AIR FORCE.

WITH THAT BRIEF INTRODUCTION, LET ME BEGIN BY DISCUSSING SPECIAL OPERATIONS, OUR SPECIAL OPERATIONS FORCES AND THEIR MISSIONS.

THE JOINT CHIEFS OF STAFF DEFINE SPECIAL OPERATIONS AS THOSE CONDUCTED BY SPECIALLY TRAINED, EQUIPPED, AND ORGANIZED FORCES AGAINST STRATEGIC OR TACTICAL TARGETS IN PURSUIT OF NATIONAL MILITARY, POLITICAL, ECONOMIC, OR PSYCHOLOGICAL OBJECTIVES. THE OPERATIONS MAY BE CONDUCTED DURING PERIODS OF PEACE OR HOSTILITIES. THEY MAY SUPPORT CONVENTIONAL MILITARY OPERATIONS, OR THEY MAY BE PROSECUTED INDEPENDENTLY WHEN THE USE OF CONVENTIONAL FORCES IS INAPPROPRIATE.

SPECIAL OPERATIONS FORCES (SOF) MUST BE SIZED, STRUCTURED, EQUIPPED, TRAINED, AND SUPPORTED TO MEET NATIONAL AND THEATER REQUIREMENTS IN PEACE, CRISIS, AND WAR. THE DEDICATED SPECIAL OPERATIONS FORCES INCLUDE THE ARMY SPECIAL FORCES GROUPS, ARMY PSYCHOLOGICAL OPERATIONS UNITS, ARMY CIVIL AFFAIRS UNITS, ARMY RANGERS AND ARMY SPECIAL OPERATIONS AVIATION SUPPORT UNITS;

NAVAL SPECIAL WARFARE UNITS (SEALS); AND AIR FORCE SPECIAL OPERATIONS FORCES. THESE FORCES CAN BE AUGMENTED BY ELEMENTS OF THE CONVENTIONAL FORCES THAT HAVE A SECONDARY ORIENTATION TO SUPPORT SPECIAL OPERATIONS. THEY MUST BE ABLE TO CONDUCT A WIDE RANGE OF MISSIONS (CHART 1) AT ALL LEVELS OF CONFLICT WHEREVER U.S. INTERESTS ARE INVOLVED. SINCE THESE SPECIAL FORCES PROVIDE THE NATIONAL COMMAND AUTHORITY WITH UNIQUE OPTIONS, THEY MUST BE READY FOR EMPLOYMENT IN CIRCUMSTANCES IN WHICH THE USE OF LARGE CONVENTIONAL FORCES WOULD BE PREMATURE, INAPPROPRIATE, OR INFEASIBLE. SOF ARE ESPECIALLY USEFUL IN RESOLVING CRISES AND TERMINATING CONFLICTS THAT ARE STILL AT RELATIVELY LOW LEVELS OF VIOLENCE. IT IS APPARENT THAT THE SOF MISSIONS ARE VERY BROAD AND VITAL TO U.S. SECURITY INTERESTS. IT IS FOR THIS REASON THAT DOD BELIEVES THAT A CAPABLE AND ROBUST SOF IS SO VITALLY IMPORTANT.

B. REQUIREMENTS

THE MISSION OF SOF IS BOTH STRATEGIC AND TACTICAL AND, UNLIKE CONVENTIONAL/NUCLEAR FORCES, INVOLVE ACTIVE EMPLOYMENT IN LOW INTENSITY CONFLICT. THE UNIQUE CAPABILITIES OF BOTH PERSONNEL AND EQUIPMENT REQUIRE CONSIDERABLE TIME TO ACQUIRE AND MAINTAIN. FOR THESE REASONS, FORCE REQUIREMENTS ARE ESSENTIALLY THE SAME FOR PEACETIME AND WARTIME. CHART 2 DISPLAYS THE PROGRAMMED FORCES WHICH EXIST FOR EACH SERVICE. THE PROGRAMMED (FYDP) FORCES ARE EXPECTED TO EXECUTE THE NATIONAL STRATEGY WITHIN MANPOWER, FISCAL, AND OTHER CONSTRAINTS. THE CURRENT FORCES ARE DISPLAYED IN CHART 3.

THE CURRENT SERVICE PROGRAMS ARE BETTER UNDERSTOOD WHEN COMPARED TO THE PLANNING FORCES THAT ARE SHOWN IN CHART 4 (deleted)

C. POLICY AND GUIDANCE

GUIDANCE TO THE SERVICES ON SOF CONSISTS OF A DEPUTY SECRETARY OF DEFENSE MEMORANDUM AND THE ANNUAL GUIDANCE PROVIDED BY THE SECRETARY OF DEFENSE. THE MEMORANDUM, DATED 3 OCTOBER 1983, IS CONTAINED IN APPENDIX A. THIS GUIDANCE WAS REAFFIRMED BY THE SECRETARY OF DEFENSE ON 31 JANUARY 1986 (SEE APPENDIX A).

THIS YEARS ANNUAL GUIDANCE PROVIDES THE SERVICES A CONCISE, CURRENT STATEMENT OF DEPARTMENT OF DEFENSE POLICY, STRATEGY, FORCE PLANNING THRESHOLDS, RESOURCE PLANNING, AND FISCAL GUIDANCE (CHART 5) FOR FY1988-1992. FORCE PLANNING AND RESOURCE PLANNING GUIDANCE CONSIST OF LONG-TERM GOALS AND MID-TERM OBJECTIVES TO BE ACHIEVED WITHIN THE FIVE YEAR PERIOD. THE RESPECTIVE SERVICES HAVE DEVELOPED SOF MASTER PLANS (WHICH ARE CURRENTLY BEING UPDATED) TO GOVERN THE REVITALIZATION OF SOF CAPABILITIES ON A DELIBERATE SCHEDULE. THE ANNUAL GUIDANCE PROVIDES FURTHER POLICY AND STRATEGY GUIDANCE TO ACHIEVE AN EXPANDED SOF CAPABILITY BY 1990 WHICH IS CONSISTENT WITH THE DEFINITIONS AND MISSIONS PREVIOUSLY DESCRIBED.

IN GENERAL, THE SERVICES MUST:

PROVIDE FORCES WHICH ARE STRUCTURED, TRAINED AND EQUIPPED TO EXECUTE THE FULL RANGE OF SPECIAL OPERATIONS ON A GLOBAL BASIS AND MAINTAIN THOSE FORCES IN A HIGH STATE OF READINESS FOR SHORT-NOTICE DEPLOYMENT.

(deleted)

IMPLEMENT PROGRAMMED SOF INITIATIVES, INCLUDING THOSE FOR RESERVE COMPONENTS, AND RESOLVE ISSUES IDENTIFIED IN THE SERVICE MASTER PLANS TO COMPLETE REVITALIZATION OF SOF UNITS AND EQUIPMENT.

(deleted)

THE ARMY WILL PROVIDE (deleted)

THE NAVY WILL PROVIDE (deleted) ACTIVE COMPONENT SEAL (SEA-AIR-LAND) TEAMS (deleted)

THE AIR FORCE WILL (deleted)

D. DEFENSE MANAGEMENT

MANAGEMENT OF DEPARTMENT OF DEFENSE SOF (CHART 6) BEGINS AT THE HIGHEST LEVEL WITH THE SECRETARY OF DEFENSE AND FLOWS DOWN TO THE UNIFIED AND JOINT TASK FORCE COMMANDERS THROUGH THE JOINT CHIEFS OF STAFF. WITHIN THE OFFICE OF THE SECRETARY OF DEFENSE, POLICY IS DEVELOPED BY THE UNDER SECRETARY OF DEFENSE FOR POLICY. AT THE SPECIFIC REQUEST OF CONGRESS, RESOURCE OVERSIGHT IS HANDLED BY THE ASSISTANT SECRETARY OF DEFENSE FOR COMMAND, CONTROL, COMMUNICATIONS AND INTELLIGENCE.

THE ORGANIZATION OF THE JOINT CHIEFS OF STAFF SERVES AS THE IMMEDIATE MILITARY STAFF TO THE SECRETARY OF DEFENSE AND ACTS AS THE COORDINATOR OF SOF ACTIVITIES THROUGH ITS PRINCIPAL ADVISORY AGENCY FOR SPECIAL OPERATIONS MATTERS, THE JOINT SPECIAL OPERATIONS AGENCY (JSOA). THE JSOA, ESTABLISHED IN JANUARY 1984 COORDINATES DEFENSE SOF ACTIVITIES AND IS CHARGED WITH ADVISING THE JOINT CHIEFS OF STAFF IN ALL MATTERS PERTAINING TO SPECIAL OPERATIONS; INCLUDING NATIONAL STRATEGY, PLANNING, PROGRAMMING, BUDGETING, RESOURCE DEVELOPMENT AND ALLOCATION, JOINT DOCTRINAL GUIDANCE, EXERCISE AND READINESS EVALUATION, AND EMPLOYMENT OF FORCES.

THE JOINT SPECIAL OPERATIONS AGENCY, WHICH REPORTS TO THE JOINT CHIEFS OF STAFF, IS RESPONSIBLE FOR PROVIDING GUIDANCE AND COORDINATION OF SOF OPERATIONS CONDUCTED BY COMMANDERS OF UNIFIED COMMANDS AND FOR SERVING AS THE CHANNEL OF COMMUNICATIONS BETWEEN THESE COMMANDERS AND THE SECRETARY OF DEFENSE.

WITH THE EXCEPTION OF THE U.S. READINESS COMMAND, THE COMMANDERS-IN-CHIEF OF THE UNIFIED COMMANDS ARE RESPONSIBLE FOR THE OPERATIONAL COMMAND AND CONTROL OF SOF WITHIN THEIR GEOGRAPHIC AREAS OF RESPONSIBILITY. THE COMMAND OF SOF IS MAINTAINED AT THE HIGHEST LEVEL AND THE CONTROL OF OPERATIONS IS

HIGHLY CENTRALIZED. NORMALLY, CONTROL IS EXERCISED THROUGH A SPECIAL OPERATIONS COMMAND, A JOINT ORGANIZATION ESTABLISHED BY THE COMMANDER OF A UNIFIED COMMAND TO ACCOMPLISH HIS OBJECTIVES AND COORDINATE THE ACTIVITIES OF THE UNIFIED COMMAND'S SOF SERVICE COMPONENTS.

THE MILITARY SERVICES ARE TASKED WITH SUPPORT RESPONSIBILITIES TO INCLUDE ORGANIZING, TRAINING, EQUIPPING, AND PROVIDING SOF TO THE UNIFIED COMMANDS. FURTHER, THE SERVICES PARTICIPATE IN THE DEVELOPMENT OF SOF DOCTRINE, CONCEPTS, PROCEDURES, TACTICS, TECHNIQUES, PUBLICATIONS, AND EQUIPMENT IN COORDINATION WITH OTHER SERVICES AND THE JOINT CHIEFS OF STAFF.

E. PERFORMANCE EVALUATION

OVERALL FUNDING FOR SOF FROM FY1981 THROUGH THE REQUEST FOR FY87 IS SHOWN IN CHART 7. THE FIGURES PRESENTED INCLUDE ALL SOF PROGRAMS, RDT&E, PROCUREMENT, MILITARY PAY (ACTIVE AND RESERVE), OPERATIONS AND MILITARY CONSTRUCTION. THE INCREASES IN FUNDING SHOWN REFLECT THE INCREASING ATTENTION THAT IS BEING PAID TO OUR CAPABILITIES TO HANDLE LOW INTENSITY CONFLICTS AND THE MISSIONS OF OUR SOF. IN REVIEWING THE FIGURES, IT IS SIGNIFICANT TO RECALL THAT THE DATE OF THE DEPUTY SECRETARY OF DEFENSE MEMORANDUM WAS OCTOBER 3, 1983 AND, THEREFORE, IMPACTED THE FY1985 REQUEST AND THE DEVELOPMENT OF THE FY1986 BUDGET.

RECENT ARMY INITIATIVES INCLUDE (deleted)

ACTIVE ARMY UNITS HAVE (deleted)

THE NAVY IS PROCEEDING WITH CONSTRUCTION OF SUBMARINE DRY DECK SHELTERS (DDS) (deleted)
INCREASES IN MILCON AND OTHER PROCUREMENTS WILL COMPLEMENT THE GROWING FORCE STRUCTURE BY UPGRADING FACILITIES AND PROCURING ADDITIONAL MISSION-ESSENTIAL EQUIPMENT.

LAST YEAR, THE AIR FORCE PERFORMED A STUDY (deleted)

THE AIR FORCE IS CONTINUING ITS EFFORTS (deleted)

ALTHOUGH THE MARINE CORPS DOES NOT HAVE ANY DEDICATED SPECIAL OPERATIONS FORCES, IT DOES HAVE A SIGNIFICANT CAPABILITY TO CONDUCT SPECIAL OPERATIONS FROM THE SEA. THE MARINE CORPS HAS CONCLUDED THAT MARINE AIR-GROUND TASK FORCES, PARTICULARLY FORWARD DEPLOYED MARINE AMPHIBIOUS UNITS, ARE UNIQUELY QUALIFIED TO CONDUCT SPECIAL OPERATIONS IN A MARITIME ENVIRONMENT. (deleted) THE INTENT IS NOT TO ESTABLISH NEW ORGANIZATIONS WHICH WOULD UNNECESSARILY DUPLICATE SOF CAPABILITIES OF THE OTHER SERVICES, BUT RATHER TO ENSURE THAT THE MARINE AIR-GROUND TASK FORCES --ROUTINELY DEPLOYED WITH THE FLEET -- ARE FULLY CAPABLE OF CONDUCTING APPROPRIATE OPERATIONS; EITHER BY THEMSELVES OR IN CONJUNCTION WITH SPECIAL PURPOSE ORGANIZATIONS.

THERE HAS ALSO BEEN PROGRESS (deleted)
WE HAVE NOT BEEN INSULATED FROM THE CRITICISM LEVELED AT THE (deleted)

WE HAVE FOUND THAT, IN GENERAL, THE CONCERNS RAISED ABOUT (deleted)

THESE MEASURES, AND CAREFUL ATTENTION IN (deleted) WOULD RESULT IN MAJOR PROGRESS.

JSOA RECOGNIZED (deleted)

IN THE (deleted)

F. OTHER INITIATIVES

ON THE FIRST OF APRIL, (deleted)

THE ADDITIONAL REQUIREMENTS TO MEET THE NEEDS (deleted)

ALTHOUGH SUBSTANTIAL PROGRESS IS BEING MADE, SEVERAL ISSUES REMAIN. (deleted)

CHART 12 PRESENTS (deleted)

G. CONCLUSION

THE ASSESSMENT OF SOF IS BEST SUMMARIZED WITHIN THE FRAMEWORK OF THE FOUR PILLARS OF MILITARY CAPABILITIES: READINESS, STRUCTURE, SUSTAINMENT, AND MODERNIZATION. (deleted)

THE DEPARTMENT IS CONTINUING TO WORK THESE ISSUES WITH THE SERVICES WITH THE GOAL OF MEETING THE AMBITIOUS SCHEDULE WE HAVE SET FOR OURSELVES. THE GOAL FOR THE REVITALIZATION OF SOF

BY 1990 REMAINS VIABLE ALTHOUGH, IN ONE AREA, THE SHORTFALL IN LONG-RANGE VERTICAL LIFT INFILTRATION/EXFILTRATION CAPABILITY WILL REMAIN BEYOND 1990. WE ARE CONFIDENT, HOWEVER, THAT CONTINUING SUPPORT FROM THE SECRETARY OF DEFENSE, THE JOINT CHIEFS OF STAFF, THE SERVICES AND THE CONGRESS WILL ASSURE THAT OUR SPECIAL OPERATIONS FORCES BECOME AN EVEN MORE IMPORTANT AND POTENT COMPONENT OF OUR ARMED FORCES.

THANK YOU.

(NOTE: Slides 2, 3, 4, 7, 8, 9, 10, 11, 12, and 13 are classified and have been deleted.)

CHART 1

SOF MISSIONS

FOREIGN INTERNAL DEFENSE
DIRECT ACTION
UNCONVENTIONAL WARFARE
PSYCHOLOGICAL OPERATIONS
CIVIL AFFAIRS
STRATEGIC RECONNAISSANCE
COUNTER-TERRORISM

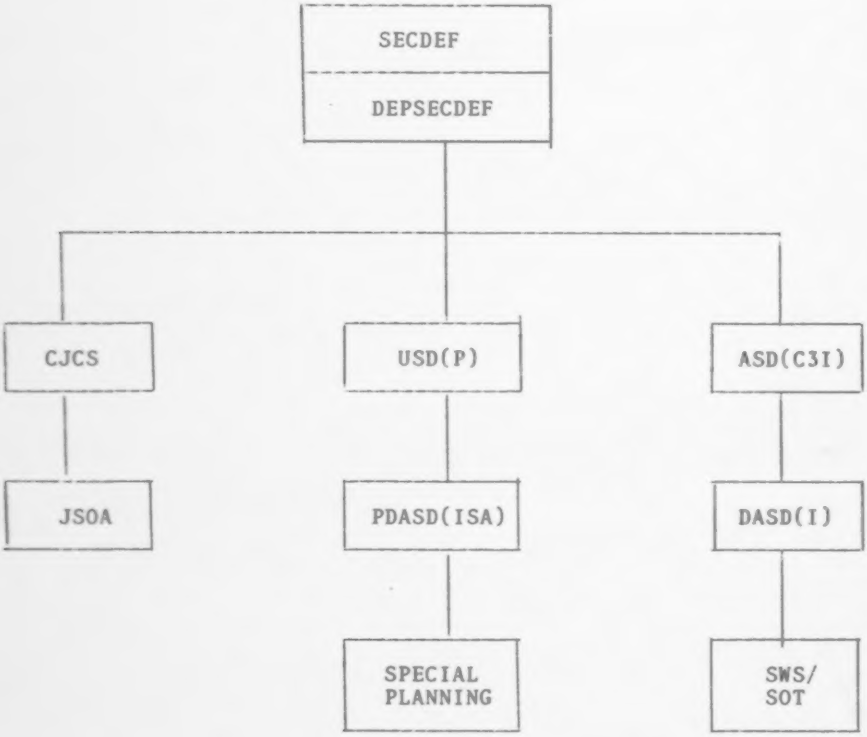
CHART 5

DEFENSE GUIDANCE ON SOF FOR FY88 AND BEYOND

- POLICY
- STRATEGY
- FORCE PLANNING
  1. LONG TERM GOALS
  2. MID-TERM (WITHIN 5 YEAR PLAN-FYDP) OBJECTIVES
- RESOURCE PLANNING
  1. LONG TERM GOALS
  2. MID-TERM OBJECTIVES
- FISCAL

CHART 6

SKETCH OF SOF ORGANIZATION STRUCTURE


SECDEF
DEPSECDEF
CJCS
USD(P)
ASD(C3I)
JSOA
PDASD(ISA)
DASD(I)
SPECIAL PLANNING
SWS/ SOT

UNCLASSIFIED

Mr. CHAPPELL. All right, sir.

Let's turn specifically to the S&I report that I referred to.

At this point I will place in the record a copy of the report that has been reviewed and declassified by the Department of Defense.

[The report follows:]

NOT FOR RELEASE UNTIL AUTHORIZED BY THE COMMITTEE

A REPORT TO
THE COMMITTEE ON APPROPRIATIONS
U.S. HOUSE OF REPRESENTATIVES

on the

SPECIAL OPERATIONS FORCES OF THE DEPARTMENT OF DEFENSE

Surveys and Investigations Staff

February 1986

NOT FOR RELEASE UNTIL AUTHORIZED BY THE COMMITTEE

February 28, 1986

MEMORANDUM FOR THE CHAIRMAN

RE: Special Operations Forces of
the Department of Defense

By directive dated May 21, 1985, the Committee requested an investigation of the Special Operations Forces of the Department of Defense and related activities and issues.

The investigation has been completed, and the results are set forth in this report. The report is classified "SECRET-NOFORN" because it contains information so classified by the Department of Defense.

Respectfully submitted,

R Vandergrift

R. W. Vandergrift, Jr.
Acting Chief of the Surveys and
Investigations Staff
House Committee on Appropriations

Joseph D. Powell

Joseph D. Powell, Director
Surveys and Investigations Staff
House Committee on Appropriations

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SUMMARY

By directive dated May 21, 1985, the Committee requested that an investigation be made into the Special Operations Forces of the Department of Defense.

The investigation focused on current force capability and its four elements; structure, readiness, sustainability, and modernization. In addition, the following related issues were addressed: the interoperability of communications; the transfer of Special Operations helicopter mission from the Air Force to the Army; associated personnel practices and procedures; the extent that reserve forces are integrated into Special Operations planning;
[ ]
the Services' compliance with Executive Order 12333; and command and control of Special Operations Forces.

Special Operations are defined by the Department of Defense as, "Those missions conducted by specially trained, equipped, and organized forces against strategic or tactical targets in pursuit of national military, political, economic, or psychological objectives. These operations may be conducted during periods of peace or hostilities. They may support conventional operations or they may be prosecuted independently when use of conventional forces is either inappropriate or infeasible."

Background

During World War II, specially constituted forces, such as 1st Special Service Forces, Navy Underwater Demolition Teams, and Army-Air Force Air Commando Groups were formed; it is from these units that contemporary SOF trace their heritage.

The Vietnam War demonstrated how SOF could be used as "force multipliers." At the height of the war some 2,000 Special Forces soldiers trained, led, equipped, and fed almost 70,000 indigenous mountain tribesmen. The concept is valid today not only for low intensity operations but also conflicts at the higher spectrum of warfare. [

]

The Vietnam defeat had an adverse affect on SOF in spite of their successes, as they were regarded as the proponent of counterinsurgency. During the 1970's, when defense budgets were generally increased, funding for SOF was cut by 95 percent and, except for naval forces, many units were deactivated.

While the U.S. was reducing its Special Operations Forces, the Soviet Union supported wars of national liberation, the overthrow of legitimate governments, and the installation of communist or sympathetic regimes. Since 1959, intelligence agencies have identified 17 successful communist insurgencies. Soviet bases have been installed in 11 countries where none were before and 14 countries have seen their ideological alignment linked to the Soviet Union. There are 19 insurgencies ongoing in the world today. [

]

The Holloway Commission Report, which analyzed the Iranian operation, identified the need for a [

] to be drawn from three Services. Though its recommendations were in reference to counterterrorism, they influenced the Defense Guidance of 1981, which directed the development of Special Operations Forces "* * * capable of conducting the full range of special operations on a worldwide basis." In response, the Department of Defense (DOD) and the Services published SOF Master Plans, setting out revitalization goals for the Five Year Defense Plan ending in FY 1990.

Force Capability of United States Special Operations Forces

Army Force Structure

The Army active components consist of four Special Forces Groups, three Ranger battalions with a regimental headquarters, one Psychological Operations Group, one Civil Affairs battalion, and one SOF Aviation battalion. These units are under the command of the 1st Special Operations Command, Fort Bragg, NC. Reserve components consist of 4 Special Forces Groups (two Army Reserve, two National Guard), 36 Civil Affairs units, 34 Psychological Operations units and 1 SOF Aviation battalion. [

] There are currently only eight groups (four active and four reserve). A fifth active group will be fielded in FY 1990-91. [

]

[ ] There are enough reservists to fulfill requirements, but there are not enough Civil Affairs units. There is no available pool of trained manpower to fulfill force structure shortages. Many military occupational skills require as much as 2 years training so new personnel are not readily available.

Active Army Force Readiness

There is no overall rating for an SFG or PSYOPS Group as each sub-unit is rated separately. There are seven reporting elements in an SFG; a headquarters company, three battalions, and three support companies (signal, service, and military intelligence). The PSYOPS group is organized as a four battalion unit with a headquarters company. [

]

Active Army Equipment on Hand

The Army, through an intensive management effort, has been able to improve the readiness of SOF. [

]

Even with these improvements, Special Forces require a number of unique assets that may not be identified in the Unit Status Report as mission essential, but have a serious impact on mission operations and training. [

] It was reported throughout this study, that if the Services were to use commercially available equipment more extensively, many shortages could be alleviated with no loss of mission capability.

Active Army Training and Personnel Issues

[

]

[

]

Army Communications

[

]

Army Reserve Components

The readiness detriments in the active components are magnified in the Reserves and National Guard. [

] The two major problem areas were equipment on hand and personnel skill qualifications. [

]

In February 1986 the Army conducted a workshop to determine reserve readiness shortfalls and remedial action. The goal is to improve equipment on hand readiness [ ] by October 1986 and personnel readiness [ ] by April 1987. At a cost of $65 million, all reserve components could be improved [ ], and for $103 million--[ ] Reserve communications equipment shortages are addressed in the FY 1987-91 Program. [

]

Army Force Modernization

Modernization includes not only equipment, but also training and force structure additions. [

]

Army Peculiar Problems Limiting Force Capability

Command and control for reserve units is scattered through several states thus creating a less responsive organizational structure.

Air Force Force Structure

The Air Force Special Operations Forces (AFSOF) consist of three distinct types; core, augmenting, and collateral. Core forces' primary mission is Special Operations. Augmenting forces have a primary mission other than Special Operations, but are thought similar enough to have a capability to augment the core forces. Collateral forces include specially trained airlift and air refueling crews.

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Other AFSOF core units include a Combat Control Squadron (CCS), a Special Operations Weather Squadron, and a Special Operations Photo Processing and Interpretation Facility. The mission of the CCS is to establish and control assault zones and provide combat air traffic control.

[

] Not all the core aircraft units have SOF tasking. For instance, the AC-130 gunships are currently tasked only to support conventional operations.

[

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Air Force Readiness

The Air Force rating system emphasizes the number of aircraft possessed versus assigned; the number of aircraft that can be ready within the unit's mandated response time, available spares, and the number of available fully trained aircrews.

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] The unavailability of fully mission capable aircraft is primarily caused by: spare parts shortages; aging airframes that are limited in number; strain to the aircraft due to SOF missions; lack of commonality among systems; and unique specialized equipment.

Air Force Sustainability

All AFSOF core units mobilize with War Readiness Spare Kits (WRSK), which are transportable packages with selected spares and repair parts designed to sustain wartime operations for 30 days.
[

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Air Force Modernization

There are numerous Air Force initiatives attempting to redress problems with AFSOF equipment, communications, sustainability, and logistics. In addition, four aircraft upgrades are being conducted by three different USAF organizations. There is no organizational structure within the Air Force to pull these projects together to optimize commonality. The cost and capability consequences of the current fragmented structure has been assessed as "extremely significant." Due to the uncertainty of such actions as Initiative 17, funding for modernization initiatives for FY 1986-1991 are estimated at $2-4 billion.

Navy Force Structure

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Augmenting forces for NAVSPECWAR include 16 HH-1K helicopters that are currently in reserve units; however, these aircraft require new avionics to support SEAL operations.

Navy Force Readiness

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The ability of SEAL reservists to assume operational active duty assignments is limited by stringent physical requirements. When mobilized they will be used initially to fill staff positions.

Navy Equipment Shortfalls

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Navy Communications

A need for secure, low probability of interception/low probability of detection communications that is compatible with other SOF components, joint staffs and naval vessels continues to be a detriment.

Navy Force Sustainability

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Navy Force Modernization

The Master Plan procurement initiatives for the Program 1986-1991, are $1.125 billion, and maintenance requirements are

$342 million. Specific procurement programs include: [ ] Special Warfare Craft-Medium surface effect boats, to be operational by April 1987, at a program cost of $235 million; [

] NAVSPECWAR has a requirement for short range airlift capability and the acquisition of UH-60 helicopters has been proposed to meet interim needs.

Joint Issues Affecting Special Operations Forces

Mission and Targeting

Missions for SOF are written in broad terms requiring those units to develop skills in many different doctrinal areas. [

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Intelligence

There is a lack of timely and sufficient intelligence support for SOF. [

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Initiative 17

Initiative 17 began as a recommendation on rotary wing SOF assets to alleviate aircraft duplication by the Army and the Air Force. This initiative requires the Air Force to "transfer the responsibility for providing rotary wing lift support for Special Operations Forces to the Army." There are current concerns that each Service may be developing and procuring different helicopters for the same mission and a possible loss of capabilty may occur during the transfer of the mission. The Army and the Air Force have disagreed as to which aircraft could best provide SOF capability. [

]

[ ] A DOD audit of this program expressed concerns that the Army may have underestimated their conversion costs and failed to include essential items such as folding rotor blades.

Joint Special Operations Agency

The Joint Special Operations Agency (JSOA) was established in January 1983 to advise the Joint Chiefs of Staff on all matters concerning Special Operations such as national strategy, planning, programming, budgeting, and use of forces. JSOA has no command authority and no functional responsibility in the budget process. In the opinion of a number of cognizant officials, it does not have sufficient oversight over the Services to redress current Special Operations shortcomings.

Air Force Layering

Effective March 1, 1983, all AFSOF was consolidated under Military Airlift Command (MAC) which then established the 23rd Air Force Command for Special Operations and Air Rescue units. The 2nd Air Division was created as a subordinate unit to the 23rd Air Force for command of SOF assets. This amounts to a redundant command structure for only 35 aircraft. Plans are being developed by MAC to abolish the 2nd Air Division and establish four Special Air Warfare Wings.

Interoperability and Limiting Factors

There is little or no joint SOF doctrine nor are SOF tactics, capabilities, and missions fully integrated into conventional doctrine. This is evidenced by the after action reports from joint exercises that indicate the same lessons are learned each time. Some Services refuse to participate in joint SOF exercises. The Readiness Command is tasked to "Develop operational concepts, tactics, techniques and procedures for joint operations of U.S. Forces" however, only Army SOF components are assigned to the command.

Normally, SOF and conventional forces do not train together in the same exercise. When they do train together the full range of SOF capabilities are not tested or structured into the exercise. As an example, Air Reserve Force gunships (AC-130's) participating in a recent Caribbean exercise were used only during the day to support conventional forces when these aircraft train predominately for night operations.

Unified and Specified commands, except for Southern Command, have organized Special Operations Commands (SOC) which are planning cells to assist theater commanders. The SOC's are minimally staffed at present but conceptually will increase to a full wartime complement upon mobilization. [

] One SOC commander stated that due to low manning levels, his SOC would not be able to conduct an extended low intensity operation without augmentation.

Effective wartime employment of the SOC's is constrained as not all personnel who are to fill wartime positions are identified. [

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Proposals for Restructuring Special Operations Forces

Many SOF officers and some Defense officials were of the opinion that something must be done to overcome the lack of SOF proponency in the DOD. They believed such proponency would solve many of the debilitating command and control problems. The Holloway Commission, evaluating the problems surrounding the aborted rescue attempt of the Iranian hostages, pointed out that the lack of an established joint command structure contributed significantly to that failure.

Many officers were of the opinion that joint doctrine was not explicit, saying, "We relearn the same lessons over and over." The problems experienced in other Special Operations--Son Tay, MAYAGUEZ, Grenada--were, in the opinion of some officials, examples of the lack of effective command and control in joint SOF operations. A recent Army analysis of command and control stated, "As evidenced during URGENT FURY [Grenada]--we are apparently incapable of rapidly establishing effective joint command and control, communications, and intelligence."

The Army recommended a new unified command, termed Strategic Services Command and conceptually, all SOF would have been placed under it. A high ranking Defense official stated that such a command was a good solution to the lack of SOF proponency. The same official thought, based on its current charter, and lacking any command or budget authority, JSOA was an unsatsifactory solution, but was improvable. The SOF budget is a small portion of the DOD budget. One officer offered, "The annual budget for SOF is about what it costs to operate the Joint Chiefs of Staff for one year." With the three Services and five theater Commanders-in-Chief attempting to redress requirements from that budget, many issues are not funded. Some items, like communications, are being independently developed and procured by each Service which only exacerbates the limited funding.

The Army is reportedly going to propose an expansion of the current Joint Special Operations Command structure. All personnel interviewed were of the opinion that the current roles and missions [ ] must be preserved as any change might be deleterious to that mission. Secondly, that whatever organization was established, the reserve components must be fully integrated to realize a "total" joint force.

The British Special Air Service (SAS) has the reputation of being one of the world's premier Special Operations Force. It covers the same spectrum of missions as U.S. SOF, but it is relatively small and has less support and equipment. The following principles were offered as a basis for its success: (1) the SAS is considered a national asset and is so funded; (2) there is unity of command; (3) its forces are tasked at the highest level and only for the most important operations; and (4) once tasked and committed, the commander in the field has total operational control.

Executive Order 12333

On December 4, 1981, the Reagan Administration published Executive Order 12333, which defined and delineated the functions, activities, and responsibilities of the U.S. Intelligence Community. The DOD and Services have established procedures to implement the Executive Order. There are limited checks and balances in their procedures, and the Services provide support without full knowledge of what the President has prescribed. To date there has been no instance where SOF was used to conduct a Special Activity, [ ]

I. INTRODUCTION

A. Directive

The Committee's directive of May 21, 1985, requested an investigation of the Special Operations Forces of the Department of Defense, related activities, and specific issues.

B. Scope of Inquiry

This study focused on the current force capability of Special Operations Forces (SOF) and planned force improvements as set out in the Department of Defense (DOD) and component Service SOF Master Plans. For the purposes of this report the concept of force capability and its four elements; force structure, force readiness, force modernization, and force sustainability were used. This report's use of these terms is consistent with DOD definitions and their prior usage in Investigative Staff reports on "Readiness of the U.S. Conventional Forces", conducted March 1982 through July 1983, and "Conventional Force Readiness and Sustainability Funding", dated March 25, 1985.

Special Operations are defined by DOD as; "Those missions conducted by specially trained, equipped, and organized forces against strategic or tactical targets in pursuit of national military, political, economic, or psychological objectives. These operations may be conducted during periods of peace or hostilities. They may support conventional operations or they may be prosecuted independently when use of conventional forces is either inappropriate or infeasible."

In addition to an evaluation of the force capability of U.S. Special Operations Forces, the following related issues were addressed:

-- the interoperability of Special Operations communications;
-- the viability of the proposed transfer of the helicopter portion of the Special Operations mission from the Air Force to the Army;
-- the personnel policies, practices, and procedures associated with Special Operations Forces;
-- the extent that reserve and guard units are, or could be, integrated into Special Operations planning;
-- the use of Special Operations Forces for covert activity and their compliance with the provisions of Executive Order 12333;
-- the command and control of SOF units and layering within the Services' command structures.

A focal point of the investigation was joint interoperability and joint command and control of SOF units. The concept of joint employment and operations was stressed inasmuch as unilateral operations were considered unlikely.

Interviews and investigations were conducted in Washington, D.C., and vicinity with officials of the Office of Secretary of Defense, the Joint Chiefs of Staff, Departments of the Army, Air Force, and Navy, and with on-site visits to selected field commands of the Services in the United States, Europe, the Pacific, and Central America. In addition, visits were made to selected foreign governments and Special Operations Forces of allied nations.

C. Background

Special Operations have a long and proud history, from the French and Indian Wars in colonial times, Roger's Rangers and Francis Marion during the Revolutionary War, John Mosby's (the Gray Ghost) cavalry raids during the Civil War, up to full scale operations conducted by specially constituted forces during World War II. It is from these World War II forces; 1st Special Service Force (an American-Canadian force called the Red Devils), U.S. Army Rangers, Merrill's Marauders, Navy Combat Demolition and Hydrographic Reconnaissance Units, Marine Raiders, 1st Army-Air Force Air Commando Group, and special units operated by the Office of Strategic Services (predecessor of the Central Intelligence Agency) from which contemporary Special Operations Forces trace their origins.

The National Security Act of 1947 temporarily ended military involvement in Special Operations by, in effect, assigning responsibility to the Central Intelligence Agency. The continued need for military forces, however, became apparent in the early 1950's with the realization that U.S. forces may be required to engage Warsaw Pact forces in Europe, and military and civilian planners realized that partisan warfare may well play a significant role in such a conflict. This was consistent with General Eisenhower's stated observation that during World War II, the French resistance was worth the equivalent of 15 divisions to the allies during the Normandy invasion.

Initially, Army Special Forces Groups were, in great part, raised from the large number of East-European persons displaced from their homeland as a result of the Soviet occupation. Conceptually, as these soldiers were native born, it was thought they should be able to return to their countries of origin to organize and assist local partisan forces that would erupt as a result of a NATO-Warsaw Pact conflict.

The 1960's found the United States faced with a new threat and one which still endangers our national security--Soviet intervention into the third world through "wars of national liberation". President Kennedy recognized this new threat and the need to combat it by unconventional means. He stated, "This is another type of war, new in its intensity, ancient in its origin * * * wars by guerillas, subversives, insurgents * * * war by ambush instead of combat * * * by infiltration instead of agression * * *. It requires in those situations where we must counter it, and these are the kind of challenges that will be before us in the next decade if freedom is to be saved, a whole new kind of strategy, a wholly different kind of force, and therefore a new and wholly different kind of military training." This philosophy resulted in new military doctrine termed "low intensity conflict", with new missions being given to U.S. Special Forces such as counterinsurgency and foreign internal defense.

Though Vietnam was not the first experience that the U.S. had in guerilla warfare and combating counterinsurgency, it was to have the most profound effect upon our military and national psyche. Without debating the propriety of the Vietnam conflict, it is still possible to glean from it numerous lessons of how Special Operations can be successful as force multipliers in low intensity operations. For example, during the height of the war some 2,000 Special Forces soldiers trained, led, equipped, and fed almost 70,000 indigenous mountain tribesmen from 83 base camps, at a cost of $100 million a year.

The concept of Special Operations as a force multiplier is still valid. Civilian and military officials contend that the 55 members of the U.S. Military Group in El Salvador have "saved the country", [

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During the Vietnam conflict the Air Force and the Navy realized the need for Special Operations Forces. The Air Force raised Air Commando Units (now titled Special Operations Squadrons) that flew a number of different aircraft. These included fire support aircraft such as the AC-47, AC-119, and AC-130; and infiltration/insertion aircraft from which the MC-130 Combat Talon aircraft and HH-53 Pave Low helicopter directly descended.

The Navy raised Sea-Air-Land (SEAL) units which have similar missions to Army Special Forces units but depend primarily on water borne infiltration techniques such as submarine or surface craft. Doctrinally the SEAL's operate only 15 kilometers inland and do not normally conduct some SOF missions such as foreign internal defense.

Vietnam ultimately had a debilitating effect on Special Forces, as they were perceived to be the instruments of the doctrine of counterinsurgency. As a result, during the 1970's, while defense budgets generally were increased, funding for SOF was cut by 95 percent. Four of seven Army Special Forces Groups were deactivated between 1969 and 1974. The number of Air Force SOF aircraft was also cut by 95 percent. The only thing that prevented the complete deactivation of the Air Force Special Operations aircraft was the Israeli raid at "Entebbe". The manner in which it was carried out prompted an inquiry regarding similar U.S. capability. After identifying this capability and need, the Air Force rescinded its deactivation plan. Only the Navy maintained their equipment and SOF force structure from the Vietnam era.

During this same period instead of scaling back, the Soviet Union, either through direct intervention or its surrogates, continued to; (1) support wars of national liberation, and (2) overthrow legitimate governments for the installation of communist or sympathetic regimes. Since 1959, U.S. intelligence agencies have identified 17 successful communist insurgencies, Soviet bases have been installed in 11 countries where none were before, and 14 countries have seen their ideological alignment influenced by the Soviet Union (these include Peru, Algeria, Iraq, North Yemen, and India). There are 19 ongoing insurgencies in the world today, i.e., El Salvador, Columbia, Philippines, Zaire, Jordan, Pakistan, etc. It is estimated that almost 10 million people have died as a result of these low intensity conflicts around the world.

In the face of the continuing threat, by 1981 the ability of the United States to conduct low intensity operations was virtually nonexistent. The disaster that came at the conclusion of the aborted Iran hostage rescue attempt forced both the military and civilian leadership to take a hard look at the consequences of a decade of neglecting SOF.

In its assessment of the rescue attempt, the Commission chaired by Admiral Holloway stressed the ad hoc nature of the organization and planning as the major underlying problem, noting that: "The Joint Chiefs of Staff had to start literally, from the beginning to establish a JTF [Joint Task Force], find a commander, create an organization, provide a staff, develop a plan, select the units, and train the forces before obtaining even the most rudimentary mission readiness."

Because the rescue attempt was considered a response to terrorism, the Holloway Commission's conclusions were couched specifically in terms of counterterrorism, and their recommendations led ultimately to the creation of a joint task force designed to cope with terrorist incidents. Nonetheless, the rescue attempt and the Holloway Commission report had a significant impact on the larger, related SOF community.

The issuance of the Defense Guidance in 1981 was a significant event. The guidance directed the Armed Services to develop a Special Operations capability. In 1983, a policy directive from then Deputy Secretary of Defense Paul Thayer called for the buildup and maintenance of Special Operations Forces "* * * capable of conducting the full range of Special Operations on a worldwide basis." This directive also required that the Services develop Special Operations Force Master Plans to outline their program goals. The first plans were developed in 1984 and resulted in SOF revitalization planned through 1990. The Services, among other initiatives, were to acquire one additional Army Special Forces Group, one additional Navy SEAL team, 18 SEAL fast surface boats, 21 Air Force Special Operations aircraft (MC-130's) and 27 additional Air Force Special Operation crews, for both C-130 and C-141 Special Operations low-level missions.

Though conceived primarily as low intensity, unconventional warfare forces, and comprising less than 1 percent of Defense manpower and funding, SOF has expanded to more diverse missions. These include counterterrorism, strategic intelligence collection, foreign internal defense, psychological operations, strike or direct action, deception, interdiction, reconnaissance, and civil action operations. The spectrum of operations continues from peacetime operations up to and including conventional high intensity conflicts. In peacetime, Special Operations Forces can assist in the stabilization of Third World Governments and act as an extension of U.S. international policy. In a high intensity conflict, Army Special Forces units can provide the perishable strategic intelligence collection and early warning that the Supreme Allied Commander-Europe considers essential to the defense of NATO.

II. FORCE CAPABILITY OF UNITED STATES SPECIAL OPERATIONS FORCES

The concept of force capability was created by DOD in 1979 to give some qualitative measure and definition to the military forces. In May 1984, the DOD defined force capability as "* * * the ability to achieve a specified wartime objective * * *." Its components which were termed the Four Pillars of Defense are force structure, force readiness, force sustainability, and force modernization. The definition of these four components are:

-- Force structure--the number and type of units currently possessed by the Armed Forces.

-- Force readiness--the ability of the force to respond to a threat and perform the assigned unit mission.

-- Force sustainability--the ability of the force to conduct military operations over a required period of time, with a required intensity.

-- Force modernization--improvements in the technological quality of the force.

This review of the force capability of U.S. SOF units will be consistent with these definitions.

A. Army

1. Force Structure

Force structure, as one senior Army Staff general officer noted, is not so much a product of national strategy or policy as a product of theater operational plans (war plans) and the joint operational planning system. The planning, programming, and budget system, through a detailed analysis, establishes the affordable force structure that can best (militarily and economically) fulfill the force requirements that the war plans generate. The end result is that current forces (type, number, amount of issued equipment, personnel, etc.) may or may not meet actual requirements.

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a. Army Active Components

The active Army Special Operations Forces consists of four Special Forces Groups, a Ranger Regiment with three battalions, one Psyochological Operations Group, one Civil Affairs battalion, and one Special Operations aviation battalion. Specifically these forces are:

1st Special Forces Group ------------- Ft. Lewis, WA
5th Special Forces Group ------------- Ft. Bragg, NC
7th Special Forces Group ------------- Ft. Bragg, NC
10th Special Forces Group ------------ Ft. Devens, MA
75th Ranger Regiment Headquarters --- Ft. Benning, GA
1st Ranger Battalion ------------------ Ft. Stewart, GA
2nd Ranger Battalion ----------------- Ft. Lewis, WA
3rd Ranger Battalion ----------------- Ft. Benning, GA
4th Psychological Operations Group -- Ft. Bragg, NC
96th Civil Affairs Battalion --------- Ft. Bragg, NC
160th Aviation Battalion ------------ Ft. Campbell, KY

A Special Forces Group is comprised of a Headquarters and Headquarters Company, three battalions and three support companies; signal, service and military intelligence. A group will average 1,384 men. The Army added one battalion to the 4th Psychological Operations Group in 1985, making it a four battalion unit to allow peacetime support to four theaters. All of the above listed active units are commanded by a major general who commands the 1st Special Operations Command, Ft. Bragg, North Carolina.

[

] This compares to the current force structure of four active and four reserve groups. A fifth active Special Forces Group, 3d Special Forces Group, will be added to the active structure in 1990/91.

Following are noted comments from the theater Commanders-in-Chief Semi-Annual Situation Reports (SITREPS) from April 1, 1984, to March 31, 1985, and from interviews with these Commanders-in-Chief (CINC's) their designated representatives, staff and selected Army commands.

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Army units are organized, manned, and equipped based on a requirements document, the Table of Organization and Equipment (TOE) which reflects specific unit missions or peculiar geographical necessities. Currently Army Special Forces Groups (active and reserve) are organized under three different TOE's. Army Staff officers indicate that a single TOE is being developed and may be implemented by 1988. Additionally, to manage equipment and personnel shortages throughout the Army, the Department of the Army has established different Authorized Level(s) of Organization (ALO) as a method of spreading out shortages by establishing different authorized strengths and equipment levels for different units. Units designated ALO-1 are normally organized at 100 percent of their authorized or modified requirement, ALO-2 equates to 90 percent down to ALO-0 which corresponds to 10 percent. Although ALO's are normally a readiness factor, they have force structure implications.

Ranger battalions are authorized ALO-1 while active Special Forces battalions are ALO-2. Although a group's battalions are at ALO-2, organic group support units are not. Military intelligence companies are authorized ALO-5 or 60 percent of requirements, while service companies are authorized an ALO-3 or 80 percent. [

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The majority of the Special Operations Forces commanders, Army Command and Theater Staff officers interviewed, expressed concern that Special Operations Forces were not ALO-1. These officers' concerns were typified by the following statement extracted from the CINC, Central Command's, SITREP, for the periods April 1, 1984, to March 31, 1985; [

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b. Army Reserve Components

There are two Reserve and two National Guard Special Forces Groups,a force structure 50 percent the size of the active force. Specifically these forces are:

11th Special Forces Group
(Army Reserve) ------------ Ft. Meade, MD
12th Special Forces Group
(Army Reserve) ------------ Arlington Heights, IL
19th Special Forces Group
(National Guard) ---------- Salt Lake City, UT
20th Special Forces Group
(National Guard) ---------- Birmingham, AL

The reserves constitute 89 percent of the Psychological Operations (PSYOPS) and 97 percent of the Civil Affairs units. There is one aviation battalion (45th Aviation Battalion, Oklahoma National Guard), formed to support Special Operations. The reserves are not authorized to be manned and organized at ALO-1. Reserve Special Forces battalions are authorized either ALO-2 or ALO-3 (90 and 80 percent respectively), and some service companies are authorized ALO-3.

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2. Force Readiness--Active Components

The measurement of a unit's readiness to perform its combat mission is the function of the Unit Status Report (USR). The USR measures four basic elements; personnel, training, equipment on hand, and equipment readiness. The element with the lowest rating usually determines the unit's overall rating but Commanders are allowed to subjectively upgrade this rating based on their assessment of the unit's readiness. The readiness status of a unit is measured by the use of C-ratings, divided into the following five levels.

C-1 Combat Ready, No Deficiencies
C-2 Combat Ready, Minor Deficiencies
C-3 Combat Ready, Major Deficiencies*
C-4 Not Combat Ready
C-5 Not Combat Ready, Training Status

* C-3 is the lowest level of readiness at which the Army considers a unit sufficiently ready to be deployable.

Active Army units are required to submit a monthly USR whereas reserve units submit their report semi-annually in October and April. The USR can be misleading as it is basically an accounting sheet that derives a mathematical answer affected by what is "available versus what is authorized". Additionally, the USR only accounts for items categorized as mission essential. Items that are needed by a unit and which have a mission impact may be available only in limited number, but this may not be reflected in the USR. Also, the USR does not take into account intangible factors such as morale and maturity of troops, age of equipment and its compatibility with other units, the adequacy of the equipment, or leadership. Thus, the report is a "snapshot" of the unit at a point in time and can fluctuate dramatically with changes in authorization documents, personnel losses and gains, and a host of similar incidents.

The Army is managing the readiness posture of the active Special Operations Forces, and shortcomings by prioritizing active units first (with forward deployed theater forces before CONUS based units) and reserve components second. This is consistent with the stated Army policy of "first to fight, first to fix." On July 5, 1985, the Office of the Deputy Chief of Staff for Operations, Special Operations Division organized a readiness action group to ascertain the readiness posture of Army SOF, determine shortcomings, and establish goals to manage remedial actions to improve readiness. Of the 39 reporting active component units (Special Forces Groups, Psychological Operations (PSYOPS) Group, Civil Affairs battalion, Ranger units, and the 160th Aviation Battalion) the following shows the improvements in readiness as a result of the Army's actions:

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There is no individual overall rating for the Special Forces Groups (SFG), or the PSYOPS Group. Each of these unit's subordinate elements reports their readiness rating/shortcoming to the Department of the Army (DA). Each SFG has seven reporting elements and the PSYOPS Group has five. The DA objective is to establish an overall reporting base by September 1986. Currently, only the readiness ratings of the SF battalions are reported to the Joint Special Operations Agency and Chairman of the Joint Chiefs of Staff, even though full reports are available. The three support companies' readiness ratings are not reported, which could have a serious impact on operational planning. Individual unit's readiness ratings for December 1985 are as follows:

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The major factors affecting the readiness ratings set out above, are as follows:

a. Equipment on Hand

In January 1985 the Vice Chief of Staff of the Army ordered that all active duty Special Forces units identify their shortages in Equipment Readiness Code A (ERC-A), items which are classified as mission essential. These shortages were to be filled, thereby increasing readiness ratings to at least C-3. Termed "Project SOF," the project excluded the 75th Ranger Regiment, the 160th Aviation Battalion and reserve components.

Recognizing the need to give special management to this project, the Troop Support Command, St. Louis, Missouri, was required to act as the materiel management office for all Army SOF materiel actions. In March 1985, the 1st Special Operations Command (SOCOM) identified final requirements to the Troop Support Command. The Army's initial attempt was to fill only ERC-A, mission essential items. The 1st SOCOM was allowed the latitude to include items that were not officially designated by authorization documents as ERC-A, but were deemed to be mission essential by subordinate units. This analysis determined requirements totaling $47 million towards which the Army initiated remedial actions. The equipment on hand posture reflecting those actions to date are:

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Special Forces are unique assets that perform a unique mission which creates problems in acquiring some of the necessary combat and support equipment. Although most items are low cost, they are of such low density of issue that SOF is not competitive in the market place or the defense procurement process, according to many Army officials. In addition, the procurement process for even high dollar items takes an inordinate amount of time--up to 7 years in some cases. According to the same officials, developing and producing such low cost items as lightweight rucksacks, loudspeakers, and portable battery charging sets to military specifications is undesirable to industry, or the cost becomes prohibitively high as there are few items to procure. Many unit personnel and Army Staff officers are of the opinion that shortages could be alleviated if the Army was required to procure similar items such as communications equipment in a joint buy, which currently they are not, thereby increasing the density of a procurement. They further stated if the Special Forces were allowed more latitude in purchasing equipment commercially, on a "non-developmental item" basis, items could be procured faster. As there would be no need for research and development, they may be procured at less cost, with no determined loss of capability. Some examples which point this out are:

-- Special Forces units tested a para-plane parachute for a number of years, after which the Army's Airborne Board tested it for another 3 years. The same parachute has been used by civilian and other military forces for at least 10 years.

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-- Members of Special Forces A-teams (operational teams) must carry in excess of 100 pounds of equipment. This includes limited food and water (a few days supply) and almost no mission equipment such as heavy demolition explosives. Much of this weight could be reduced by lightweight equipment, clothing, rucksacks, and battery charging equipment. As none of this is available through military procurement, many soldiers actually purchase items from commercial houses such as "Eddie Bauer or Sears and Roebuck." Soldiers rate these items superior to issued equipment and are mission capable.

b. Training

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One major training problem that many unit personnel related,is that some Army units do not train with Air Force special mission aircraft, i.e., MC-130, AC-130, or HH-53's, on a regular basis, resulting in a lack of familiarization. Normally these aircraft are only available during joint or directed exercises due to their limited number.

Personnel in Special Forces Groups are heavily committed to provide Mobile Training Teams (MTT's) to foreign governments. Instruction includes light infantry tactics and basic military skills, such as parachuting. The extent these forces are used is substantial. For example:

-- In 1983, 59 MTT's with 591 U.S. personnel were deployed to 19 countries.

-- In 1984, 65 MTT's with 599 U.S. personnel were deployed to 20 countries.

-- As of August 1985, 17 MTT's, deploying 88 personnel to 20 countries had been completed and 3 more requiring 42 personnel, were scheduled.

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c. Personnel Issues

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-- In 1984, the Army established a SOF career branch, series 18, for enlisted personnel. This allows enlisted personnel to compete only against other Special Forces personnel for schools, assignments, etc. This was not done for the officers, instead a secondary skill (identifying them as Special Forces) was authorized. Officers must still compete in their basic occupational branch such as Infantry or Armor. There is nothing to suggest that Special Operations officers are treated differently or are passed over in greater numbers than their peers, but most Special Operations officers stated that they are pressured to get out of Special Operations after one assignment, and not seek subsequent or conjunctive assignments in Special Operations. Officers stated that during basic and advanced officers courses, there is negligible instruction on Special Operations for those outside the SOF community. Senior officers attending the Army War College receive less than 15 hours of SOF instruction during the year-long curriculum, according to War College personnel. By comparison, more than 100 hours is taught at the British Command and Staff School.

Throughout the investigation, Special Forces officers expressed the need for the establishment of a Special Operations branch for officers. It was thought that a Special Operations branch would provide "continuity and maintenance of a force of highly skilled Special Operations officers, allow a concerned branch to protect officers' interest, full time career managers, Special Operations representation on boards [schools and promotions] and increased emphasis on professional development and education."

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A number of Army posts have established their own schools to teach languages, and though these schools can graduate more than 500 personnel annually, by regulations, they are prevented from teaching to the same level of proficiency as the Defense Language Institute, Monterey, California. In an attempt to retain language trained personnel within a unit requiring that peculiar language, the Army has formulated a "regimental assignment structure." Soldiers rotate between a Continental United States assignment to the forward deployed battalion of the group, e.g., one tour at Ft. Devens, Massachusetts; and one tour at Bad Tolz, FRG.

There has been some discussion within the Army as to the feasibility of proficiency pay (pro-pay) for language qualified personnel. This concept received almost universal acceptance when it was discussed. Pro-pay may have advantages, and the manner in which the British Special Air Service (SAS) addresses the problem could be a consideration. After basic instruction (paid for by the government) and demonstrated proficiency, instead of a monthly stipend, an SAS trooper receives qualification pay based on language difficulty (more money for Arabic than German). The SAS soldier is tested at least annually and is paid per demonstrated proficiency, (the more proficient, the more the financial reward) but there is no unit time or direct government investment, except that training materials are provided.

-- Except for the 160th Aviation Battalion and the Ranger personnel who are exempt, most Army units are required to provide personnel for post support and maintenance. Such "housekeeping chores" as trash pickup, drivers for duty vehicles, and personnel to work at post services (i.e., gymnasium) are normally the burden of the very junior enlisted ranks. Special Forces battalions are for the most part staffed at much more senior grades than an infantry battalion. Thus, for them, post maintenance duties fall on E6's and E7's instead of E2 or E3's. Additionally, these senior and highly trained personnel are taken from necessary training and mission responsibilities to support a host of nonappropriated activities such as lifeguards for the post swimming pool and coach for the girl's basketball team. During the month of July 1985, more than 193 personnel from the 1st Special Operations Command's units at Ft. Bragg, North Carolina, were detailed to these type of post support activities.

d. Communications

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[ ] This is in part because operational unit assets are used to fulfill liaison commitments to higher, adjacent, and other Services headquarters in order to fulfill doctrinal and theater plan requirements, and overcome interoperability problems. As there are currently no equipment or personnel authorized, units must reduce operational complements to meet liaison generated shortages.

[ ] AN/TSC-26 base station radios. [ ] technologically 35 years old, is very difficult to maintain, [ ] In 1978, the Army began development of the AN/TSC-99 to replace the AN/TSC-26. [

] They are in storage because the users (Forces Command and 1st Special Operations Command) refuse to accept them [ ] Among the major shortcomings of this system is; [ ] are [ ] (2) many of its components are rated "oversized" [

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Although Army officials note that [ ] it plans to issue the 30 sets to units after software deficiencies are corrected and validated by the users. Army officials are of the opinion that there is such an urgent need for base station support, that even this inadequate system is better than nothing. [

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-- SOF contingency plans are heavily dependent upon the Joint Communications Strategic Element based at McDill AFB, Florida, for command and control communications. Though the assets assigned to this unit are more modern, they are nonetheless limited and the unit is tasked in numerous operational plans to various theaters. [

] Without this unit, the connectivity between Army Special Operations command headquarters, Special Forces operating bases, staging bases, and higher headquarters would, in the opinion of knowledgeable officers, be severely strained.

[

] The burst communications devices that Army Special Forces units and Navy SEAL teams use are not compatible. Deployed teams cannot communicate directly with one another and must communicate through higher headquarters.

-- Special Forces A-teams are issued two radios for communications from their deployed locations to higher headquarters. No operational team personnel are qualified to field repair these radios. [

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-- Communications equipment is not reliable in all areas of the world where Special Forces are expected to operate. [

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Additionally, the batteries that operate deployed units' communications equipment must be kept at 40 degrees fahrenheit or above, in order to function. This adversely impacts on cold weather operations.

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3. Force Readiness--Reserve Components

The conditions described in the active components are magnified in the Reserves and National Guard. When the Army instituted "Project SOF" to correct equipment shortages, the reserve components were not included. The Army is now, however, taking actions to remedy these shortfalls. [

] The following are the readiness ratings, as of October 1985, for the reserve Special Forces Groups (SFG):

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[

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NOTE: [

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According to Army Staff officers, two factors could have an adverse effect on these goals. The potential mandatory reductions of the Gramm-Rudman law could "significantly delay or eliminate many modernization plans." Secondly, because of the administrative manner in which new equipment is issued to the Reserve and National Guard units, those items may not be received by the intended units. According to the same officers, in the active Army new equipment can be controlled down to receiving units, but, when items are issued to the reserve components, the regional Army commands and National Guard Bureau have the authority to divert equipment to a different recipient. They expressed concern that new equipment may be "siphoned-off" to other units, thus no improvement in readiness would be realized.

a. Equipment on Hand

The Reserves and National Guard have equipment shortages that could significantly offset their capability to perform their wartime mission. [

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-- While the reserve component Special Forces Groups have some of the authorized organic airlift support, many have been issued substitute, or "in lieu of" items. For example, each group is authorized two short takeoff and landing, light aircraft. None of the groups have the authorized aircraft; however, one group has UH1H helicopters in lieu of the fix wing aircraft, and one group has a C-7A Caribou in lieu of the UV-18 authorized. Other infiltration items are also short.

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b. Training

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Many Special Forces Group subordinate units are spread across the United States and are under a myriad of state, federal and military headquarters. This frustrates the ability of the groups to train as an entity. For example, the headquarters of the 12th Special Forces Group, United States Army Reserve (USAR) is in Arlington Heights, Illinois, yet its subordinate units, battalions, and separate/attached companies, are spread throughout 12 states. The 11th Special Forces Group, USAR, headquartered at Ft. Meade, Maryland, has subordinate units in seven states.

The two National Guard groups are not as fractured although none have all of their subordinate units in the same state or even in the same Continental Army. As a result, subordinate units are not in a single chain of command, the same State Guard Bureau (or even all within the Reserves or Guard). Some units do not formally come under a headquarters command until mobilization. For one group, fully one-third of its combat power is unavailable until mobilization.

The lack of availability of Special Operations schools also severely impacts the readiness of reserve forces. The USAR requests schools through their respective Army headquarters 3-years in advance. The National Guard, makes its requests through the National Guard Bureau, 5-years in advance. The difficulty in accurately forecasting needs that far in advance, results in operational skill shortages throughout the Reserve Components. One group had submitted 147 applications for schools and received only 14 school allocations. There were a number of instances, wherein reserve personnel received allotted time off from their civilian employers only to find upon arrival at the school that the course had been cancelled.

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In the context of mission specificity, the reserve units of the British Special Air Service (the 21st and 23rd Territorial Army Regiments) are trained to perform only reconnaissance missions. These units have approximately the same available paid training time as U.S. reservists, 26 paid training days per year, but are rated by their active component as qualified to perform their wartime mission.

c. Personnel Issues

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In the Special Forces Groups, the two occupational skills that are the most difficult to keep filled are the same as the active components; communications specialists and medical technicians. This is due to: (1) length of time required to train these personnel, and (2) the difficulty in competing with the more lucrative civilian market. Additionally, the Special Forces Groups must be able to recruit an individual who can devote nearly 1 year on active duty for basic training, advanced individual training, parachute school, and Special Forces qualification school, just in order to meet basic Special Forces skill levels.

d. Communications

[

] Due to maintenance problems, those issued have been inoperable for 6 of the last 12 months. [

]

-- The AN/GRA-71 Burst Transmission Group is issued to the reserve components. This system is out of production and replacement parts are not available, [
] These reportedly will be replaced by Digital Message Device Groups currently issued to the active forces, however, fielding dates were not available.

-- Although authorized, none of the reserve component groups are issued tactical satellite communications assets.

-- Due to the unique design and age of the reserve's communications systems "Interservice and intertheater usage is [

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The Program, FY 1987-1991, includes more than [ ] for reserve component communications shortages and some force structure additions.

4. Force Sustainability

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5. Force Modernization

Force modernization is the improvements in the technological quality of the forces that enhance their capability and effectiveness. It includes not only new equipment acquisition but also training and doctrinal enhancements. New technology is not to drive changes but rather, through mission area analysis and development plans, a Master Plan has been formulated, which is the architecture for the revitalization of SOF. This Master Plan, first prepared in 1984, sets out the required force structure and the concommitant modernization. The Army has identified 160 deficiency areas and is addressing these deficiencies through the Department of the Army, Special Operations Forces Modernization Action Program (SOFMAP) dated December 1985.

The SOFMAP addresses both active and reserve components and was developed through a number of planning documents submitted by the U.S. Army Training and Doctrine Command (TRADOC), the John F. Kennedy Special Warfare Center (USAJFKSWC) and the 1st Special Operations Command (1st SOCOM). This plan prioritizes the requirements and shortcomings of doctrine, force structure, training, manning, and materiel according to mission tasks. Remedial actions are specified, and anticipated completion dates have been established for procurement and other systemic changes. An example of an identified SOFMAP deficiency is as follows:

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Addressing the above deficiency, the SOFMAP sets out increases in personnel spaces for the active and reserve components through FY 1992, with specific tasks/actions to be completed by Army Staff functional elements and reserve component headquarters.

Implementation of the Modernization Action Plan has also resulted in systemic improvements: (1) the streamlining of materiel acquisition by granting the Commander of USAJFKSWC, acquisition approval authority for non-major systems thus eliminating the 18 to 20 month Training and Doctrine Command validation process; (2) improving fiscal management standards for the Army Staff; and (3) institutionalizing a General Officer Steering Committee to analyze Special Operations Force programs for the annual update of the SOFMAP. There is an initiative to provide the 1st SOCOM an account/identification number. This will allow SOF requirements to be submitted directly to Department of the Army instead of through Forces Command, Atlanta, Georgia.

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A requirement has been identified for a "table top" base station to support a rapid response element. The Army estimates this sytem will cost approximately $300,000 to $500,000 each, with a requirement for 27 units. It plans to field three sets for each active and reserve Special Forces Group.

6. Army Peculiar Problems-- Limiting Force Capability

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Reserve and active Army personnel expressed a need to effect command and control changes to fully integrate the reserves into the Special Operations Forces structure.

B. Air Force

1. Force Structure

The force structure of the Air Force Special Operations Force (AFSOF) consists of three distinct types; core, augmenting, and collateral. Core forces are those whose primary mission orientation and tasking is Special Operations. These forces are specifically manned, equipped, and trained for this mission. Examples include the MC-130 Combat Talon aircraft, the AC-130 Spectre gunship, and the HH-53 Pave Low III helicopter in the active force and the AC-130, HH-3, and EC-130 psychological operations aircraft in the Air Reserve Force. Augmenting forces, by comparison, are those whose primary mission is other than Special Operations but is considered similar enough to include a capability to augment the core forces. Because of the similarity of flight profile and concept of operations, i.e. single ship, low profile, ingress, pick-up and/or delivery, and egress, all augmenting forces are combat air rescue assets. Examples include HC-130 tankers and HH-53, HH-3, and UH-60 helicopters.

Collateral forces are of two distinct types with two very distinct missions. The first type consists of a small number of strategic (C-141) and tactical (C-130) airlift crews, who by virtue of experience and specialized training, can perform certain Special Operations missions. These crews carry a Special Operations Low Level (SOLL) designation and are either SOLL 1 or SOLL 2. SOLL 2 crews are those with additional qualifications which allow them to operate the aircraft using night vision goggles. The second type of collateral forces are Tactical Air Command (TAC) Airborne Command, Control, and Communications (ABCCC) aircraft and [

] There are no augmenting or collateral forces in the Air Reserve Force, and with the exception of some collateral force assets, all AFSOF aircraft are variants of either the C-130 cargo aircraft or the H-53, H-3, or H-1 helicopters.

The following chart shows the core aircraft by Special Operations Squadron (SOS) or Group (SOG), type, number of aircraft, and location:

AIR FORCE SPECIAL OPERATIONS
CORE AIRCRAFT

Squadron	A/C	Number	Location
		Active	
1st SOS	MC-130E	4	Clark AB, RP
7th SOS	MC-130E	4	Rhein-Mein AB, FRG
8th SOS	MC-130E	6	Hurlburt Field, FL
16th SOS	AC-130H	10	Hurlburt Field, FL
20th SOS	HH-53H	7	Hurlburt Field, FL
*2nd AD, Det 1	UH-1N	4	Howard AFB, PN
		Reserve	
302 SOS	HH-3/CH-3	6	Luke AFB, AZ
711 SOS	AC-130A	10	Duke Field, FL
		Air National Guard	
193rd SOG	EC-130E (RR)	4	Harrisburg International Airport, PA

* 2nd Air Division Detachment 1

a. Air Force Special Operations Forces--Core Aircraft

As previously stated, AFSOF core aircraft are those dedicated to Special Operations, and include both active and reserve components. The median age of these aircraft is 20 years with the oldest over 30, and the newest over 12.

MC-130E Combat Talon I

The Air Force acquired the original cadre of what has come to be known as Combat Talon I aircraft during the 1960's. A total of 18 Combat Talon I aircraft were built, 14 of which remain in the active combat inventory--3 were destroyed and [

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These 14 aircraft consist of 3 variations. The four assigned to the 1st Special Operations Squadron (SOS) at Clark AFB, Philippines, and are known as "Yank" configuration aircraft. The six aircraft assigned to the 8th SOS, Hurlburt Field, Florida, have an enhanced Electronic Countermeasure (ECM) capability and are known as "Clamp" aircraft. The remaining four aircraft are assigned to the 7th SOS, Rhein-Mein Air Base, West Germany, and are "Clamp" aircraft with additonal ECM equipment [ ]

The mission of the Combat Talon is to conduct clandestine, day and night, long range, infiltration, exfiltration, reconnaissance, and resupply into hostile territory using terrain masking to avoid detection. The aircraft is capable of "blacked-out" air land operations, high speed airdrop, and surface to air recovery to facilitate this mission.

Each of these late 1960's vintage aircraft is equipped with the APQ-122, a circa 1968 terrain avoidance/terrain following and mapping radar. This radar, [ ] allows the pilots to conduct "head-in-the-cockpit" operations in the 250 to 500 foot above ground level (AGL) flight regime, and is a derivative of the RF-4, F-111 radar manufactured by Texas Instruments. In addition, these aircraft are equipped with an inertial navigation system which provides a self-contained and passive, navigation system which has an accuracy of within 1 to 1 1/2 nautical miles per flight hour. Other specialized MC-130 equipment and modifications include:

-- AAQ-10 forward looking infrared sensor;
-- AAQ-8 infrared countermeasures pods;
-- Air refueling;
-- Upgraded navigation, electronic warfare, and radar operator stations and equipment;
-- ALE-27 chaff and ALE-40 flare dispensers;
-- Electronic countermeasures equipment and antennas;
-- High speed, low level, airdrop airframe modifications;
-- Unique cockpit layout to accomodate additional sensor displays;
-- Fulton Surface to Air Recovery (STAR) system; and
-- Helicopter refueling pods.

The last two items are not included on all 14 Combat Talon I aircraft. Only nine are equipped with the STAR system and only six are equipped to air refuel helicopters. The aircraft's unique night capability is enhanced by night vision goggle compatible cockpit and cargo bay lighting, and infrared landing lights.

Originally painted black, these aircraft have been repainted in the European One scheme to reduce their unique profile. They are, nevertheless, easily distinguishable by a knowledgeable observer, due to their unique radome, ECM antennas, and other subtle airframe differences.

AC-130A Spectre

These are the first AC-130 version of the lateral firing gunship, a concept first incorporated on the C-47 "flareship" used in Vietnam in the mid-1960's. The lateral fire concept was quickly validated in combat in Vietnam, as were the aircraft's inherent advantages of an extended loiter time and a self-contained ability to illuminate targets for nighttime attack.

Advancing technology, plus the demonstrated unique capability in Vietnam, resulted in a rather rapid evolution within the gunship family. It also resulted in a decision to utilize the AC-130A, airframe. These aircraft, converted in the late 1960's from 1953 vintage C-130 airframes, were modified to be self-contained, night attack, aircraft for employment in a permissive environment. There are currently only 10 of these aircraft still operational and all are presently assigned to the 711th Special Operations Squadron, Air Force Reserves, Duke Field, Florida.

While representing a quantum improvement over the AC-47, these aircraft are much less capable than the follow-on AC-130H Spectre found in the active force. These particular aircraft are 30 years old; their specialized equipment is 1960's technology; are virtually unchanged since production; have no Special Operations tasking; are tasked only to support conventional operations in a high intensity, global conflict; and have been considered for transfer to the Military Aircraft Storage and Disposition Center at Davis-Monthan AFB, Arizona. Seven of these aircraft recently completed programmed depot maintenance (PDM) at a cost of $742,000 per aircraft at which time the center wing box was replaced at an additive cost of $284,000 per aircraft. The remaining three aircraft are scheduled to be completed by early March 1986. The following is a list of some of the AC-130A primary mission equipment:

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-- Two fixed 40 millimeter guns
-- Two fixed 20mm guns
-- Two fixed 7.62 mini guns
-- Low light level television
-- Forward looking infrared
-- Analog fire control computer
-- Laser target designator
-- Inertial navigation system
-- Radar warning receiver
-- Chaff dispenser

Because of the age of the avionics on these aircraft, the fire control system and avionics are considered unsupportable past 1989 to 1991.

AC-130H Spectre

The "H" model is the most recent version of the AC-130 Spectre. It became operational toward the end of the Vietnam war, and represents both a response to the increasing threat posed to the gunship as well as a significant increase in "surgical" night attack capability. Unlike the A model, these aircraft were not modified but were built as gunships. The single most important difference between the A and H version is the integration of sensor and navigation information into a fire control system linked to trainable guns, not fixed, which include a 105mm howitzer. It is this version that proved to be the most effective "truck killer" of the Vietnam war and their surgical close air support capability was demonstrated again during the Grenada operation.

There are currently 10 of these aircraft, all of which are assigned to the 16th Special Operations Squadron, Hurlburt Field, Florida. These aircraft possess the following specialized mission equipment:

-- Black Crow (see AC-130A)
-- One 105mm trainable howitzer
-- One 40mm trainable gun
-- Two 20mm Vulcan fixed automatic guns
-- Low light level television
-- Forward looking infrared
-- Inertial navigation system
-- Radar warning receiver

In addition, the aircraft have the following equipment not found on the AC-130A:

-- Digital fire control system integrated with trainable guns and Heads-up Display (HUD)
-- Enhanced ECM and IRCM
-- Secure voice in UHF/FM/HF frequencies
-- Satellite communications
-- Inflight refueling receiver
-- Improved, more powerful TA-54-A-15 engine
-- Loran C and D receivers
-- Infrared spotlight
-- Gated Laser Illumination Night TV (GLINT)

Unlike the AC-130A, the aircraft has the ability to deliver highly accurate firepower at night, under conditions of low ceilings and/or poor visibility without resorting to a fixed flight pattern.

HH-53H Pave Low III

The HH-53H Pave Low III helicopters are the rotary wing complement to the MC-130E Combat Talon I. The original 1970 requirement for a long range, low level, rescue helicopter, capable of incursions into hostile territory, was based on shortfalls experienced in attempts to rescue U.S. pilots downed in North Vietnam and the Son Tay prison raid. Concept development continued and culiminated in the present twin engined, air refuelable, Pave Low III when during 1979 and 1980 nine HH-53C's were modified for night and adverse weather operations, 13 years after the original requirement.

[

] They remained in TAC until the Special Operations mission was consolidated in 23rd Air Force, MAC in March 1, 1983.

Seven of the original nine aircraft remain in service. They are assigned the 20th Special Operations Squadron at Hurlburt Field, Florida, and are considered by many to be the most sophisticated helicopters in the world. The sophisticated avionics package installed in these aircraft allow them to operate successfully in almost total darkness or in instrument conditions at an altitude as low as 100 feet with no visual outside reference.

The current mission of the Pave Low III is to conduct undetected day and night, adverse weather infiltration, exfiltration, reinforcement, and resupply in a low to medium threat environment. Although considered core AFSOF assets in the AFSOF Master Plan they are not necessarily available to meet SOF contingency requirements.

Each of these aircraft is equipped with a terrain avoidance/terrain following radar adapted from the A-7 radar. In addition, the aircraft are equipped with an inertial navigation system which is coupled to a Doppler navigation sensor. This provides the aircraft with a highly accurate navigation capability. Other specialized equipment include:

-- Stabilized forward looking infrared sensor with a ± 10° horizontal scan
-- Central avionics computer
-- Symbol generator system
-- 35mm film map display
-- Radar warning receiver
-- Flare and chaff dispensers

Normal employment of these aircraft can include three .50 caliber machine guns, one mounted at each cargo bay side window and one on the aft ramp. The history of the HH-53H Pave Low III has been cited as a classic example of the synergism between Air Force combat air rescue and Special Operations.

EC-130E Rivet Rider

Perhaps the most unique AFSOF core asset is the four EC-130E Psychological Operations (PSYOPS) aircraft assigned to the 193rd Special Operations Group (SOG), Pennsylvania Air National Guard, Harrisburg, Pennsylvania. Known by a variety of names--Rivet Rider (RR), Coronet Solo, and Volant Solo II--these specially modified aircraft are the sole support for fixed wing PSYOPS mission. Because other EC-130E's are in the Air Force inventory, these four aircraft are usually listed as EC-130E RR aircraft.

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Although they are in the Air National Guard, the 193rd Special Operations Group (SOG) [

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This is due primarily to a unique memorandum of agreement between the Air National Guard Bureau, the Military Airlift Command, and the Governor of Pennsylvania. [

] They are also included in the President's 100,000 reserve component call-up authority.

HH-3E/CH-3E

These six Air Force Reserve aircraft are slightly altered versions of the Navy's SH-3 Sea King. Procured as CH-3's by the Air Force between 1963 and 1968 for air rescue, they were transferred to Special Operations in 1974. Four of these aircraft have recently been made air refuelable, resulting in the redesignation as HH-3's. The remaining two are not scheduled for modification due to the extensive additional modification that would be required for these particular aircraft. All six aircraft are assigned to the 302nd Special Operations Squadron (AFRES) at Luke AFB, AZ and are organized, trained, tasked, and equipped for Special Operations.

They are capable of infiltrating or exfiltrating a 12 member force (A-team), are armed with .50 caliber or 7.62mm machine guns, and are the only amphibious core AFSOF asset. In addition, the aircraft's capability is enhanced by the aircrews training and certification to operate with Night Vision Goggles (NVG's). This allows night visual terrain following at significantly lower enroute altitudes similar to the Pave Low III. Although contained in the AFSOF Master Plan, and designated by Headquarters MAC as core assets, the squadron is currently scheduled for dissolution with the aircraft transferring to air rescue at Portland, Oregon.

UH-1N

The UH-1N is the latest twin engine version of the "Huey" Bell helicopter series that dates back to 1958. Used extensively in Vietnam and transportable in a C-130, the Air Force versions are of two types-the gunship and the light lift, tactical transport or "slick". The "slick" can be armed with two M-60 machines guns, firing 550 rounds per minute of 7.62mm ammunition. The gunship, which is the SOF version, can be armed with either two 7.62 miniguns capable of 2,000 or 4,000 rounds per minute-or two .50 caliber machine guns capable of 750-850 rounds per minute. The gunship versions are also equipped with twin external pods, each containing seven 2.75 inch Fin Folding Aerial Rockets with various explosive warheads. To meet their SOF requirements these aircraft have enhanced internal auxillary fuel tanks and upgraded navigational equipment. They have a combat radius of approximately 175 nautical miles with a fully equipped A-team aboard.

There were originally nine of these gunship versions built and designated as core AFSOF assets, five were assigned to the 20th SOS at Hurlbut Field and four to Det 1, 2nd Air Division in Panama. One of five at the 20th SOS was lost at sea January 9, 1984, while supporting the drug interdiction program leaving a current inventory of eight.

Effective October 1, 1985, the four UH-1N helicopters assigned to the 20th SOS were transferred to the 48th Air Rescue and Recovery Squadron, Homestead AFB, FL., and given an air rescue mission. They also assumed 20th SOS's responsibility to provide two UH-1N aircraft to support Operation BAT--a project to curtail the flow of illicit drugs to the U.S. through the Caribbean Islands. This transfer was, according to the Air Force, the direct result of Initiative 17.

The remaining four UH-1N helicopters are assigned to Detachment 1, 2nd Air Division (AD) Canal Zone, Panama, and represent the only theater SOF airlift support in Southern Command. According to the Commander-in-Chief of Southern Command (CINCSOUTH), the aircraft's capability fulfills an important part of theater requirements, but is limited because of the small number of aircraft and their limited range. This unit was programmed to receive two additional UH-1N's, but this action was cancelled as a result of Initiative 17. [

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An additional enhancement which was forwarded to the Air Staff for consideration and is generally referred to as the "4/12 package" upgrade to the UH-1N. As briefed, this off-the-shelf contractor upgrade results in the UH-1N having more capability to meet SOUTHCOM requirements than that of a SOF HH-60 helicopter. Several senior Air Force officers agreed that this upgrade would significantly improve AFSOF ability to meet CINCSOUTH requirements.

This package, which costs approximately $1 million per aircraft, zeros the airframe time, increases the airspeed limit at maximum gross weight from 110 kts to 140 kts (within 10 kts of the UH-60), reduces the accoustic signature, and provides an additional 1,000 pound payload capacity. If utilized in fuel, this additional 1,000 pound payload would significantly increase the Air Force SOF combat radius of the UH-1N. Full consideration of the cost effectiveness of this upgrade for SOF was dismissed as a result of the Air Force's decision to transfer the short-range SOF airlift mission to the Army. It is, however, still being considered for incorporation on the UH-1N's assigned to the 89th Military Airlift Wing at Andrews Air Force Base, Maryland, which is the unit that provides airlift for the President, other U.S. government officials and foreign dignataries. This upgrade is also currently being sold through Foreign Military Sales (FMS).

[

] As of January 1986, these aircraft were programmed for transfer to combat air rescue during the third quarter of FY 1986 and their flying hours have not been funded beyond that period.

In addition to the air assets, there are two other specialized core AFSOF units considered essential to Special Operations. They are the 1723rd Combat Control Squadron (CCS) and the 6th Special Operations Weather Squadron, both located at Hurlburt Field, Florida.

While there are two other CCS's in the Air Force, the 1723rd is the only one tasked, trained, and equipped to support Special Operations. Specifically, their mission is to rapidly establish and control assault zones and provide IFR/VFR combat air traffic control in support of conventional and Special Operations. In order to carry out this mission, they are required to be able to perform clandestine reconnaissance and surveillance, provide enroute navigation aids and terminal target designation, direct air strikes, establish forward area long-range secure communications and rapid refueling points, and conduct explosive ordnance demolition. In their Special Operations role they generally deploy with or ahead of the Combat Talon and Pave Low aircraft, operating primarily at night using NVG's. [

] They also have the capability to deploy by land or by sea utilizing equipment similar to U.S. Navy SEALS.

The 6th Special Operations Weather Squadron consists of 5 officers and 44 enlisted personnel tasked to provide world-wide weather observation support. Of the 44 enlisted, 19 are dedicated to AFSOF support and are considered a core element. These 19 include one Special Activities Element of specially trained personnel. [

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The remaining AFSOF core asset is the Special Operations Photo Processing and Interpretation Facility. This facility, which is also located at Hurlburt Field and attached to the 1st Special Operations Wing, consists of mobility personnel and equipment tasked to provide forward based limited photo processing and interpretation in support of Special Operations.

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Overall, of the 55 core aircraft, 10 are being transferred to air rescue--the 6 H-3's at Luke AFB,and the 4 UH-1N's in Panama; 10 have no SOF tasking or training--the reserve AC-130A's at Duke Field; and 23 failed to complete their operational readiness inspection December 1985--the 6 MC-130H, 10 AC-130E's and 7 HH-53 Pave Low's assigned to the 1st Special Operations Wing at Hurlburt Field. Of the remaining 12, 8 are OCONUS MC-130 Combat Talons--4 in the Philippines and 4 in Germany, and 4 are EC-130 Volant Solos assigned to the Pennsylvania National Guard. [

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b. Air Force Special Operations Forces--Augmenting Aircraft

Augmenting aircraft consist of less sophisticated combat rescue versions of the MC-130E, H-53H and H-3E core aircraft and the combat rescue UH-60A's. These aircraft are assigned within the 23rd Air Force, and are either part of the 39th Air Rescue and Recovery Wing (ARRW) at Eglin AFB, Florida, or the 41st Rescue and Weather Reconnaissance Wing at McClellan AFB, California.

AUGMENTING FORCES

Wing/Squadron	Type	Number	Location
39th ARRW			Eglin AFB, FL
55th ARRS --------	HC-130N/P	[ ]	Eglin AFB, FL
	UH-60A	[ ]	Eglin AFB, FL
67th ARRS --------	HC-130N/P	[ ]	RAF Woodbridge, GB
	HH-53C	[ ]	RAF Woodbridge, GB
41st RWRW			McClellan AFB, CA
41st ARRS --------	HC-130N/P	[ ]	McClellan AFB, CA
	HH-53C	[ ]	McClellan AFB, CA
31st ARRS --------	HH-3E	[ ]	Clark AB, RP
33rd ARRS --------	HC-130N/P	[ ]	Kadena AB, Japan
38th ARRS --------	HH-3E	[ ]	Osan AB, RK

* These aircraft are dedicated assets which provide tanker support to the HH-53 Pave Low III helicopters of the 20th SOS.

[

] According to AFSOF Concept of Operations documents, these aircraft are required to operate in concert with core AFSOF aircraft, which presents significant problems.

HC-130N/P

These C-130 airframes are specially configured to meet combat air rescue needs. The three primary distinctions between this version and "slick" tactical airlift C-130's are; all are tankers capable of refueling to helicopters; all have an enhanced communications capability for dissimilar aircraft operations, all have chaff/flare dispenser, and all have NVG compatible lighting.

The eight dedicated to support the HH-53 Pave Low III helicopters have additional modifications which include; NVG compatible cockpits, radar warning receivers, and upgraded navigation equipment. None of these aircraft have "Type I" AFSOF capability which is required by AFSOF concept of operations. Type I modifications include; terrain following/terrain avoidance radar, precision ground mapping radar, forward-looking infrared, an inflight refueling receiver, infrared countermeasures, and electronic countermeasures.

Other shortfalls include: the incompatibility of HF secure communications equipment with that of supported aircraft and forces, the lack of a low range radar altimeter, and poor inertial navigation capability.

HH-53C

These are a much less capable version of the Pave Low III helicopter. [

] Of the 10 augmenting HH-53's all are air refueling receivers, have a combat rescue hoist, 7.62 miniguns, and NVG compatible lighting. The five at the 41st ARRS were modified with an upgrade navigation system following the Iranian rescue attempt.

HH-3E

These are similar versions of the SOF HH-3E's assigned to the 302nd SOS (AFRES) Luke AFB, Arizona, and all 10 are in the Pacific Air Force (PACAF). According to a PACAF message to MAC, "The H-3 remains the most reliable of all USAF heavy lift helicopters and its potential as an effective command asset should no longer be overlooked."

[

] According to one HH-3E unit, "The pilots right out of [training] can navigate 10 times better than this [system] using map-and-eyeballs." This imprecision, together with notorious unreliability, results in pilots ignoring the data provided [by the system]. In addition to these shortfalls the HH-3 is also underpowered and the units appear under supported. [

] All the augmenting HH-3's are air refuelable.

c. Air Force Special Operations Forces--Collateral Aircraft

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These are C-130 tactical airlift and C-141 strategic airlift aircrews that maintain some specialized training qualifications in the atypical Special Operations Low Level (SOLL) mission profile. Depending on their qualification, these aircrews are designated as either SOLL I or SOLL II, and the qualifications vary depending on whether it is a C-130 or C-141 aircrew. [

] All augmenting crews are required to carry out their missions with basically generic fleet assets.

The following chart lists the type crew, number, location, and qualifications of MAC collateral air crews.

COLLATERAL ASSETS

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The primary AFSOF capability of these collateral units is derived from the inherent and developed capabilities of air crew coordination, Night Vision Goggles (NVG), and masking tape to eliminate aircraft lighting incompatible with NVG's. There is, however, a cost to the tasked units. For instance, to employ one C-130 SOLL II crew requires two and one-half normal mission crews. This is because, in the absence of specialized AFSOF equipment, threats to safety must be overcome by crew experience. Each crew position requires a qualification level much higher than that for normal missions. For example, the co-pilot must be a qualified aircraft commander and most SOLL II positions require instructor level experience.

This dependency on people to shore-up the AFSOF shortfall was underscored by the comments of one senior Air Force officer who explained, "MAC is relying on cockpit experience to take the place of equipment. Everytime we try to get some specialized equipment to support the SOLL II crews, MAC's response is 'its in the POM.'" The assessment by the SOLL crews interviewed is that MAC is reluctant to do anything that will divert airframes "from their airline business of strategic airlift."

2. Force Readiness

While the general parameters for determining and reporting readiness are set out in a Joint Chiefs of Staff, Memorandum of Policy (MOP) 172, each service has its own implementing instruction and the vagaries presently allowed create a situation where interservice comparisons are of limited utility. Within a single service and among similar units, meaningful comparisons can be made, provided the person making the comparison is fully aware of the nuance of the reporting system and the potential effects.

A squadron's C-rating is calculated separately in each of the four measured resource areas required by the instruction; equipment and supplies on hand, equipment readiness, personnel, and training. The lowest rating of the four resource areas determines the squadron's overall C-rating unless subjectively raised or lowered by the squadron commander. For aviation units, the system emphasizes the number of aircraft possessed, versus assigned, the number that can be made ready within the unit's Designated Operational Capability (DOC) response time, the percent of authorized spares available, the number of aircrews formed and available, and the number of aircrews fully trained.

The implementing Air Force regulation, AFR 55-15 was strongly influenced by the nominal force structure of Tactical Air Force (TAF) Wings. Generally, this consists of a wing of three squadrons of like aircraft, with each squadron containing 24 tasked aircraft plus a non-uniform number of additional untasked aircraft referred to as Backup Aircraft Inventory (BAI). These aircraft are not counted against the squadron's authorization or requirement, but can be used as additive assets in calculating the percent of aircraft possessed and combat ready. In other words, a squadron with 24 primary authorized aircraft (PAA) and 6 BAI could have 6 non-combat ready aircraft and still report its assets as 100 percent combat ready. The degree to which a squadron differs from this doctrinal structure increases the nuance inherent in the squadrons readiness report.

In apparent recognition of the effect BAI aircraft can have on the readiness rating, and, according to some DOD officials, in response to continued Congressional pressure to increase AFSOF readiness; the Air Force deleted one authorized aircraft from all but two AFSOF core units. Both units were either scheduled to be dissolved or transferred from SOF.

It should be noted that AFSOF squadrons are small compared with typical TAF squadrons--4 to 10 aircraft versus 24 to 28--and their crews are large--5 to 14 versus 1 or 2. These differences have a significant effect on that part of the C rating that reports the percent of aircraft available for full mission tasking and the part that reports the number of fully mission trained integral crews. AFSOF C-ratings are much more sensitive to the loss of a single aircraft and the probability that an integral crew member will be unavailable or not fully trained is much higher. These fundamental differences dictate that an AFSOF squadron, in order to be C-1, must be richer in resources than a typical TAF squadron. This includes: a higher percentage of BAI aircraft and critical spares; higher aircrew ratios; and better reliability, maintainability, and availability rates for equipment.

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SPECIAL OPERATIONS AIR FORCE READINESS

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** Actual ratings were not provided, however, according to a General Officer level briefing at MAC headquarters, the unit has consistently been C-1 or C-2.

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The report also shows the problems have been aggravated by "Fleet wide problems [which] are a direct result of underfunding C-130 and helicopter spares in the early eighties."

3. Force Sustainability

The first level of sustainability are the War Readiness Spares Kits (WRSK's) which are assigned to units tasked to mobilize. All AFSOF core units are so tasked and are authorized these air transportable packages of selected spares and repair parts designed to sustain the unit's wartime operations. The nominal period of support for AFSOF WRSK's is 30 days. At the end of that time the units are totally dependent on repair, resupply, and war reserve material. The following chart reports the average WRSK fill rates for AFSOF core aircraft for the period April 1981 to July 1985.

AVERAGE SOF WRSK FILL RATES

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] This action, according to Air Force officials was a result of the Air Force position on Initiative 17 and the decision to transfer these aircraft to combat rescue.

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4. Force Modernization

The Air Force is currently pursuing some type of upgrade, enhancement, or new procurement for every core aircraft except the HH-3E helicopter. Almost all of these programs were either begun when AFSOF was under the Tactical Air Command, were directed by Congress, or are in response to a Joint Special Operations Command requirement.

These programs are fragmented among numerous Air Force organizations and are being done independently even though there is recognition that the current lack of AFSOF equipment commonality has significantly complicated readiness, sustainability, logistics, and training. Not only are these programs shared between Air Force System Command (AFSC) and Air Force Logistics Command (AFLC), but they are further fragmented within AFSC and AFLC. In partial recognition of this problem, the Air Force Scientific Advisory Board, in its July 1985 report on Enhancement of Special Operations Forces noted:

> "Currently, four aircraft upgrades (CT-I [Combat Talon I], CT-II [Combat Talon II], AC-130, and H-53) are being done independently by three different USAF organizations. Unless appropriate, immediate action is taken to assure commonality of equipment on these aircraft, any hope of realizing the significant benefits of commonality will be lost!" [Emphasis in the original.]

This report, was published in August 1985, and forwarded to various Air Force organizations which were directed to comment. As of February 19, 1986, MAC has not forwarded its responses. In a February interview with the Vice Commander of MAC regarding this very issue, he acknowledged that "MAC has the responsibility to pull these programs together and will seek help from higher headquarters if necessary."

In addition, there are other uncertainties that compound the modernization effort. In attempts to determine the cost consequences of building to a prudent AFSOF requirement, several impediments were encountered which included:

-- The Air Force does not know how much, if any, of the current AFSOF requirements will be offset by the Army's MC-47E and MH-60X SOF aircraft programs.

-- Theater CINC requirements are currently being revalidated and the new requirements are not yet available.

-- The configurations and quantities of current enhancement programs for AFSOF are not finalized, but have significant cost consequences.

-- The AFSOF Master Plan is being revised and the issue regarding which Service--Air Force or Army or both--will assume the mission and budget responsibility for light-lift, rotary wing SOF support is still in question.

The best estimate that could be obtained was that, depending on how the above uncertainties are resolved, the Air Force estimate to fully implement the revised 5-year AFSOF Master Plan will be between $2 and $4 billion, or less than one-half of 1 percent of the Air Force budget per year for the next 5 years.

C. Navy

Naval Special Warfare is defined in the Navy Master Plan as "* * * that set of naval operations generally accepted as being nonconventional in nature, in many cases covert or clandestine in character, including utilization of specially trained forces assigned to conduct unconventional warfare, psychological operations, beach and coastal reconnaissance, operational deception operations, counterinsurgency operations, coastal and riverine interdiction, and certain special tactical intelligence collection operations in addition to those intelligence functions normally retained for planning and conducting operations in a hostile environment."

Naval Special Warfare (NAVSPECWAR) forces are structured and equipped to be mobile, quick, reactive, and easily deployable. The basic element of NAVSPECWAR is the individual Navy SEAL (Sea, Air and Land). These individuals are trained in combat swimming, ground assault tactics, and parachuting to meet their wartime missions. SEAL's make-up the SEAL teams, SEAL Delivery Vehicle teams and provide the officers for the Special Boat Squadrons. Non-SEAL personnel are assigned as crews for the Special Boat Squadrons and some support positions. SEAL's are used in some support functions because of a shortage of support personnel.

SEAL's may be transported to and from their target via the SEAL Delivery Vehicle (a mini-submarine), conventional submarines, airborne insertion, or various small craft operated by the Special Boat Squadrons.

1. Force Structure

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Augmenting forces for Naval Special Warfare includes HAL-Four (Attack Helicopter-Light) and HAL-Five Squadrons which are reserve units that provide air support to both active duty and reserve SEAL units. HAL-Four is operationally assigned to CINCLANTFLT and HAL-Five to CINCPACFLT. [

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2. Force Readiness

Naval Special Warfare forces are trained to operate under covert, clandestine,and guerrilla conditions in addition to supporting conventional warfare and fleet operations. Many of their capabilities are degraded by a lack of mobility, which includes no aircraft carrier capable transport, state-of-the-art communications and other equipment shortfalls. There are insufficient resources to meet the requirements of existing theater operational plans. Many plans require additional platoons to be formed from qualified personnel currently performing support functions; which in turn exacerbates equipment shortages.

NAVSPECWAR personnel believe their forces are basically satisfactory in the areas of personnel and training. Equipment shortages are the primary reasons for any lack of readiness. [

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The readiness ratings for active duty units of Naval Special Warfare Groups One and Two as of September 1985 are outlined below.

READINESS RATINGS
SEPTEMBER 1985

Unit Rating

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* Commanding officer's assessment that units are marginally C-2 to C-3.

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] Naval Special Warfare personnel stated that many of their readiness problems would be resolved if they could expedite the procurement system and establish a separate, higher priority for their needs. As items are normally small in quantity and relatively inexpensive Naval Special Warfare is often, in the opinion of some naval officers, at the end of the procurement spectrum and they do not receive needed items in a timely manner. With authority to buy non-developmental items, Naval Special Warfare units could acquire critical shortage items thereby realizing an increased readiness posture.

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Naval Special Warfare staff officers have proposed the use of the "brick bat" priority system to obtain badly needed equipment, particularly communications. Although they have been given a high priority (PAD 1) to obtain necessary equipment, they still must "stand in line" or compete with other units procuring the same equipment from hardware contractors. By using the "brick bat" priority, Special Operations Forces would be able to move to "the front of the line" to obtain the equipment in a timely manner. Department of Defense Instruction 4410.3, dated April 4, 1978, defines those programs in the brick-bat category "* * * of the highest national priority by reason of key political, scientific, psychological, or military objectives."

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SEAL training has shortfalls in several areas that contribute to a lack of readiness. [

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As SEAL team support functions are performed primarily by SEAL trained personnel, training exercises and other commitments make it difficult for the various units to reach or maintain a high state of materiel readiness. As a result, Naval Special Warfare places a high priority on increasing technical support positions in future growth.

SEAL reservists are to report to their respective centers within 48 hours of a mobilization call-up. The effectiveness of reservists may be initially limited, as current Service policies limit sufficient, meaningful training the gaining units can give to prepare reservists for appropriate taskings; i.e., there is a lack of training time and reserve units are unable to train for specific tasks.

Reservists may not be able to assume active duty SEAL positions immediately as they are not able to meet the stringent physical and near instant readiness requirements that mission taskings require. NAVSPECWAR units will primarily use reservists to replace active duty SEAL's in staff positions to allow staff personnel to assume an operational assignment. Reservists can thereafter physically condition themselves to fill operational vacancies caused by casualties.

Readiness ratings are not used for Naval Special Warfare [

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a. Personnel

Unlike other Services the Navy has kept its Special Operations Forces relatively constant since World War II. As a result, Naval Special Warfare may have the best overall personnel system in the SOF community. The system provides the flexibility for SEAL personnel, officers and enlisted, to stay in Special Operations in a well defined career progression without an adverse career impact. The primary personnel problem is recruitment for Naval Special Warfare, which is solely from within the Navy. Training personnel at the Basic Underwater Diving School (BUDS) do not think candidates for Naval Special Warfare are adequately screened before they reach BUDS at San Diego. Indicative of this, the school turns away over 70 percent of the applicants, for failing to meet minimum acceptance standards.

Once a candidate is selected for the 23 week basic training at BUDS the physical and mental demands result in a high student attrition rate--[ ]--with most of the failures or dropouts occurring before or during the sixth week. This may have an impact on planned increases of Naval Special Warfare personnel. In order to meet projected requirements for the Master Plan, BUDS classes will be increased from the present five classes per year ([ ]) to eight classes per year. Naval Special Warfare units do not want to lower standards because experience has shown that with lower quality more injuries result.

Once the candidate completes BUDS training and becomes a qualified SEAL, the advancement is good for both officers and enlisted personnel; in fact, it is better than fleet averages for comparable grades. Financially, SEAL's receive hazardous duty pay of approximately $200 each month, and sea pay is received when embarked aboard ship.

Reenlistments are considered comparable or better than fleet averages with first term SEALS reenlisting at the rate of 73 percent, second term enlistments are at the rate of 80 percent, and career enlistments are at the rate of 97 percent.

Limited shore duty opportunities have an adverse personnel impact. Naval Special Warfare is a relatively small organization and the number of shore duty assignments are limited. As a result, personnel spend a large amount of their career in a sea duty status. [

] In the opinion of many SEAL personnel, long periods of time in a sea duty atmosphere can have a demoralizing effect upon an individual.

Naval Special Warfare capabilities are not widely understood in the Navy and this leads to misunderstanding of what SEAL's are and how they support both the fleet and other conventional operations. As an example, at any level of officer schooling the maximum amount of instruction/indoctrination in Naval Special Warfare capabilities is only 1 to 2-hours.

b. Equipment Shortfalls

In addition to communications equipment shortfalls, there are other significant equipment shortfalls. [

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NAVSPECWAR units have an ongoing program to enhance foreign language skills. [

] Training is conducted in as many as 12 different languages. Like the other two Services, naval personnel stressed the need for incentive pay as an inducement to acquire and maintain language proficiency.

c. Communications

Current NAVSPECWAR communications assets and planned acquisitions are inadequate to meet Service doctrinal and inter-service operational requirements. Current assets are not reliable due to their age [

] Connectivity between other naval forces, other Services and SEAL teams is inadequate. [

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NAVSPECWAR staff officers are attempting to eliminate the shortfalls in communications equipment. [

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COMMUNICATIONS--INVENTORY OBJECTIVES

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3. Force Sustainability

Should there be a low intensity conflict or a conventional war, Naval Special Warfare will be required to support their entire tasking responsibilities with on hand assets. [

] Special Boat Squadron reserve personnel should be able to assume active duty positions as they report.

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[ ] Pre-position locations were established based on current operational plans requirements. Group One personnel contend that the amounts of prepositioned stock identified in the War Reserve Munitions Requirement (WRMR) manual are adequate [ ] NAVSPECWAR officers stated that the unit received its "fair share" of available assets on a "first come-first served" basis. [

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4. Force Modernization

Naval Special Warfare (NAVSPECWAR) staff officers have an ongoing program commitment to the SOF Master Plan to modernize the forces. Cognizant officials state that impediments to modernization are; a low procurement priority, lack of funding, and the inability to purchase items outside the normal procurement system. In order to expedite the acquisition of critically needed items, some staff officers believe the civilian market should be utilized which has better products for thermal protection, parachutes, and communications than through normal procurement systems. These could be procured on a non-developmental basis to meet established shortages.

NAVSPECWAR elements are developing a medium size surface boat to replace the Vietnam vintage fleet of 65 foot patrol boats, called the Special Warfare Craft-Medium (SWCM). Initial operating capability was scheduled for the first quarter of FY 1986 but construction problems will result in a delay of approximately 9 months.

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III. JOINT ISSUES AFFECTING SPECIAL OPERATIONS FORCES

A. Mission and Targeting

The missions for active and reserve Special Operations Forces (SOF) are generally written into Operational Plans in a very broad manner. These missions usually outline SOF component capabilities, e.g., reconnaissance, infiltration, exfiltration, unconventional warfare, and other capabilities rather than a specific tasking. This lack of specificity requires units to spend training time attempting to develop skills in all doctrinal areas instead of training to a prioritized mission requirement. Only in the European Theater has there been a prioritization of missions. [ ] In response, Army SOF units have been able to tailor training, equipment, and language requirements to this mission, thereby utilizing scarce time more effectively.

The reserve and augmenting components of SOF are more adversely affected by this lack of specifity, as they have less time to train. All of the reserve units stated that if they were tasked to do one mission or if tasks were prioritized, they could utilize limited training time more effectively. Although all Army Special Forces Groups are tasked against specific OPLANS, some aspects of OPLANS are unclear or unknown to them. [ ]

Special Boat Units 11 and 22, Mare Island, California, and, New Orleans, Louisiana, respectively, are Naval Special Warfare reserve units. These units have no operational taskings and do not know how they will be used in any SOF or conventional operation, though both units are listed as augmenting forces by the Navy. These two units do, however, have a significant SOF capability. [ ] According to senior naval officers, the absence of tasking is more a function of the inability to have access to forward deployed river patrol boats, than a lack of utility. There was evidence that the Navy is attempting to insure CINC's understand that this capability exists.

The 711th Special Operations Squadron Air Force Reserves, located at Duke Field, Florida, is listed as an augmenting AFSOF, but have no SOF tasking. The 55th Air Rescue and Recovery Squadron located at Eglin Air Force Base, Florida, is an active duty unit listed as augmenting AFSOF and they too have no assigned AFSOF missions.

Target production, which is a theater responsibility, is prescribed and outlined in the Joint Chiefs of Staff Publication 20, Volume II, and is currently under revision. [

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Conceptually, targets are selected by the theater target boards, and passed to the Services who are responsible for target planning. The primary SOF product of this planning process is the Target Folder [

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There are a number of reasons for this situation:

-- Some targets were selected for SOF without any analysis as to what the units were capable of executing.

-- Some targets were selected without any guidance as to what should be accomplished e.g., interrupt communications at the target areas for a special period of time.

-- Some were given to SOF as essentially one way missions as exfiltration of the team was not feasible. In the words of one Army Special Forces Group Commander, "What I was given by the theater to do was a suicide mission."

-- Target priorities have changed in some theaters and no target planning has taken place awaiting revisions.

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A recent Army Staff report on the aforementioned Target Intelligence Packet (TIP) problems stated, "The TIP production has been an age old problem--never done well--[and] done differently [by] each theater," because, "it lacks visibility as a problem with CINCs [Commanders-in-Chief], ARCOM [Army/Commanders], and DA [Department of the Army], there are different doctrinal interpretations of JCS PUB [Joint Chiefs of Staff Publication] 20, Volume II, and intelligence force structure is different in each theater."

B. Intelligence

A lack of timely intelligence and consistent intelligence support is a common complaint in the Special Operations Forces community. There is a consensus of opinion that appropriate and meaningful intelligence data is available, but is not timely. The current format of requesting and disseminating intelligence is considered too layered for timely and meaningful results.

The only discipline of intelligence that all SOF units/commanders felt was consistently not available to them for planning or actual operations, was human intelligence. There was no such intelligence being provided by any national or service agency, which was deemed critical by SOF personnel. Interviews with unit personnel indicated, situationally there were instances that peculiar intelligence requirements were not satisfied.

One theater Commander-in-Chief, stated "The weakest link in Special Operations is intelligence." He stated that SOF units require direct access to the Defense and Central Intelligence Agencies, as well as other national agencies. He advised that a unified SOF headquarters could effect better intelligence support from these and other intelligence agencies.

C. Initiative 17

In November 1983, the Chiefs of Staff of the Army and the Air Force approved a "term of reference" which established a joint group to develop a plan "to ensure coordinated programs for the Army and the Air Force beginning with the FY 86-90 POM." On March 22, 1984, the group issued a report containing 34 recommendations including one on "Rotary Wing Special Operations Forces," subsequently referred to as "Initiative 17". The report noted "SOF forces currently require both Air Force and the Army to do [the] rotary wing mission. The development of similar platforms in each Service to provide rotary wing lift support to SOF is duplication of effort." The recommendation was "Transfer rotary wing SOF to the Army."

As affirmed on May 22, 1984, by the Memorandum of Agreement between the Chiefs of Staff of the Army and the Air Force, Initiative

17 called for the Air Force to "transfer the responsibility for providing rotary wing lift support for SOF to the Army" and for the joint development of an implementation plan. The back-up documentation for this decision did not comment on why the prior joint procurement of F-4 aircraft was not considered duplicative, nor did it comment on the current joint procurement of the CV-22. In addition, as justification for creating the 23rd Air Force, the Military Airlift Command's position was that there is a synergism between combat air rescue and Special Operations. Another initiative, Initiative 16 places combat air rescue firmly within the Air Force. During the course of this investigation many high ranking current and former military officials suggested that the interrelationship between Initiative 16 and 17 was either ignored or overlooked when the 1984 USA-USAF Memorandum of Agreement on roles and missions was signed.

There has been a great deal of concern expressed in all quarters regarding this transfer. The reclame was extensive enough to prompt the Deputy Secretary of Defense to twice withhold authority for full implementation, citing his concern for the near-term impact on SOF lift support in the absence of a viable Army alternative to the Air Force's HH-53 Pave Low helicopter. The Army countered with a "paper airplane" proposal--described internally as the MC-47E--an inflight refuelable CH-47 with enhanced adverse weather capability. This was followed by a sub rosa paper war with the Army extolling the design capabilities of the proposed MC-47E and the Air Force presenting a conversion to more HH-53 Pave Lows the more cost and capability effective alternative. Several questions were raised by this investigation, which were shared by DOD and included:

-- Since the Army acknowledges the MC-47E, as envisioned, would be the most sophisticated aircraft in the Army inventory from where does it propose to draw the maintenance support required to maintain these aircraft? Would the Air Force, with its inventory of B-52, F-4, F-15, F-16, and MC-130 aircraft be better able to provide the required avionics support personnel than the Army?

-- Since the CH-47 has been known to exhibit an undulating flight characteristic even in stable air, would this have an effect on its ability to aerial refuel?

-- Is the fact that the CH-47 cannot be employed clandenstinely on a U.S. Navy carrier a relevant issue?

-- How would the acoustic, infra-red, and radar signature of the MC-47E compare with that of the HH-53 Pave Low III?

A Department of Defense Inspector General's Audit of the Army CH-47 SOF modernization program expressed different concerns. These included:

-- The Army proposal to enhance the CH-47 may have significantly understated the costs.

-- The proposal excludes characteristics which may be essential to special mission performance including rotor brake, deicing equipment, and folding rotor blades.

-- The use of new, more powerful engines may create added (uncosted) safety problems.

-- Other suitable aircraft may be available in the DOD inventory.

Additional concerns were raised by the current Chairman JCS, in his position as Commander-in-Chief, Pacific. His response was contained in a lengthy November 9, 1984, message to Army and Air Force Headquarters, Washington which stated in part: "The MOA states the Air Force will transfer the responsibility for providing rotary-wing support for SOF to the Army. This causes concern regarding the rotary wing mission responsibilities. The Air Force has long developed capabilities that are not common to any facet of Army aviation--night/adverse weather; inflight refueling, sophisticated avionics * * *. The transfer of mission responsibility must be in an orderly and time-phased manner so as not to degrade the nation's already limited SOF capability. This should only be after the Army acquires the sophisticated systems required and the fully developed support structure to ensure program continuance * * * The USA-USAF MOA compounded the lack of theater assets and the two-year MC-130H procurement slip problems by deleting 24 SOF HH-60 * * * from the USAF POM without offset by the USA POM. The potential loss of dedicated systems with sophisticated avionics for night, adverse weather penetration, and inflight refueling degrades capabilities of USPACOM allocated forces to support contingency or wartime operations."

Despite these concerns, the Air Force effected programmatic changes based on Initiative 17 which did, or will, impact negatively on AFSOF capability. They are: the Air Force temporarily shutdown the pipeline for HH-53's personnel; four core AFSOF UH-1N's were transferred to combat air rescue on October 1, 1985, four additional core AFSOF UH-1N's and six core AFSOF HH-3/CH-3's are scheduled for transfer from SOF during calendar year 1986.

While the transfer of aircraft from one mission to another is a force structure issue, the lead time to re-acquire the necessary logistics support for this AFSOF mission will negatively impact AFSOF readiness.

It is worth noting that Initiative 17 began as a response to the dual procurement of similar helicopters (H-60's) for different missions and one of its consequences is the present development and procurement of vastly different helicopters (HH-53 and MC-47) for the same mission.

D. Joint Special Operations Agency

The Joint Special Operations Agency (JSOA) was established January 1, 1983. The mission of JSOA is to advise the Joint Chiefs of Staff in all matters of Special Operations which includes, but is not limited to; national strategy, planning, programming, budgeting, and employment of forces. As an advisor, the Director of JSOA has no command authority, no control over Special Operations Forces and no functional responsibility or control over the Services' Planning, Programming and Budgeting System cycle.

The establishment of JSOA was a compromise on a number of proposals which ranged among establishing a new unified or specified command, expanding the missions for an existing command, and maintaining the status quo. The Services compromised and established JSOA as a two star billet, to rotate among the Services and report directly to the Chairman of the Joint Chiefs of Staff (JCS). The preponderance of the personnel in the SOF community have stated that JSOA's current charter does not provide sufficient control over the Services to redress the current Special Operations shortcomings. Many senior DOD officials and JSOA staff officers expressed the same opinion.

This was in spite of a December 23, 1983, memorandum to the Secretary of Defense in which the Special Operations Policy Advisory Group expressed concern that the Director of JSOA would lack proponency on the JCS staff. The Advisory Group was comprised of six retired flag and general officers, each of whom had extensive Special Forces backgrounds. This Group was established to give the Secretary of Defense independent advice on Special Operations matters. In its memorandum, the Advisory Group presented a strong recommendation that the JSOA Director must be a three star flag or general officer. This was necessary as "* * * key elements [SOF commands]--Joint Special Operations Command, 1st Special Operations Command and 23rd Air Force--are all commanded by two star general officers," and the Director could "* * * more effectively orchestrate the joint aspects of Special Operations with benefit of superior rank." The Director's relationship with the rest of the JCS staff was also addressed, and they observed, "* * * [in] the day-to-day workings of the Joint Staff, visibility and influence are, in large measure, a function of rank. Our experience has led us to conclude that if the Director is to represent SOF effectively within OJCS * * * deal on an equal basis with three star Directors of other key Joint Staff, * * * the

Director must be a three star flag or general officer * * * or a Director could well be overwhelmed by the joint system."

Recently the former Director of the Joint Staff attempted to have the Director of JSOA report through the JCS, Director of Operations by, "designating [to] the Director for Operations [JCS] * * * [the] additional responsibility of staff oversight of JSOA and directing that JSOA should coordinate all actions through the Director of Operations." This, as one senior DOD official stated, "* * * was because the Director [Joint Staff] on many occasions had to talk to colonels as the JSOA Director was traveling on official business." This directive was not instituted, but points out some of the problems surrounding JSOA as it exists.

On balance, the establishment of JSOA has generated some benefits for the SOF community. Research and development projects are being better coordinated to insure less duplication of programs among the Services. Service staff officers and JSOA representatives have had component and theater conferences to pursue joint issues such as communications and targeting.

The current Principal Deputy Assistant Secretary of Defense (International Security Affairs), was chartered by the Deputy Secretary of Defense in 1983 to; "Serve as the focal point within the Office of the Secretary of Defense for Special Operations Forces and counterterrorism matters." According to one Defense official, "This is an additional duty that can be arbitrarily affected by the personalities of superiors and the individual himself." This, and concerns relating to JSOA and its command and control limitations, have caused many cognizant officials to state there is no one individual in charge or responsible for SOF.

E. Air Force Layering

Effective March 1, 1983, Air Force Special Operations Forces (AFSOF) and combat rescue assets were consolidated under the operational control of the Military Airlift Command (MAC) and assigned to 23rd Air Force. Special Operations units were transferred from the Tactical Air Command, Pacific Air Forces, and the U.S. Air Force-Europe to the 23rd Air Force headquartered at Scott Air Force Base, Illinois, to centralize the command of Special Operations and air rescue units. Simultaneously, the 2nd Air Division was created at Hurlburt Field, Florida, as a subordinate unit to the 23rd Air Force with immediate command over all core AFSOF.

The establishment of both the 23rd Air Force and the 2nd Air Division was seen by some as an unnecessary layering of command because of the small number of aircraft involved (35).

Shortly after the initiation of this investigation, the Military Airlift Command and the 23rd Air Force began reassessing this organizational structure and are currently developing plans to change it. The Vice-Commander of the Military Airlift Command recently confirmed that a reorganization to address the concerns of command layering is in order but a final decision has not been made.

Tentative reorganization plans will abolish the 2nd Air Division and establish four Special Air Warfare (SAW) Wings that will report directly to the 23rd Air Force. Three of the proposed Wings will be Special Operations, one in Europe, one in the Pacific, and one at Hurlburt Field, Florida. The fourth Wing will be primarily air rescue and will be located on the West Coast.

The advocacy for Air Force Special Operations has been primarily from the 2nd Air Division and there is concern that this advocacy will be lost with its disestablishment. The Vice-Commander, Military Airlift Command dismissed this concern saying that 2nd Air Division personnel will be assimilated into the 23rd Air Force, and their experience, knowledge, and advocacy will be retained.

F. Interoperability and Limiting Factors

There is limited joint SOF doctrine, and SOF tactics, capabilities, and missions are not integrated into conventional doctrine. A review of joint exercise after action reports indicate, the same "lessons learned", are present in each report. One officer stated that the central finding of the Army Doctrinal panel that reviewed joint doctrine was, "There is no joint SOF doctrine."

The Readiness Command, McDill AFB, Florida, is tasked to "Develop operational concepts, tactics, techniques, and procedures for joint operations of U.S. forces," but only the Army has SOF experienced personnel assigned to the Command. Without a Special Operation Forces supporting guide or doctrine, from one source, it may be difficult to properly train and obtain any degree of interoperability. As one officer said "the only thing that ties everything together now is rapport."

Joint training is not properly conducted, not only because there is no doctrine to exercise, but some Services refuse to participate in some exercises, because the exercises do not meet Service peculiar requirements. The lack of Navy participation in FOAL EAGLE, a SOF exercise conducted in Korea, was an example.

Normally, SOF and conventional forces do not train together in the same exercise, but conduct their exercises separately. As an example, REFORGER is a conventional forces war exercise held in Europe each year but includes no SOF units. Conversely, FLINTLOCK, a SOF exercise held annually in Europe, does not involve conventional forces. When conventional forces and SOF participate in the same exercise, the full range of SOF capabilities are not tested or structured into the exercise. For example, during a recent exercise in the Caribbean (UNIVERSAL TREK), Air Force Reserve gunships (AC-130's) were used to support conventional forces. These aircraft, which train predominately for night operations, were used only during the day and were afforded no nighttime exercise opportunities. This is not the only reported instance that Air Force SOF participated in a joint exercise that did not include night operations which is their primary mission profile.

Military training and exercises are usually conducted to simulate wartime conditions. One SOF commander stated that due to concerns from his four star Army commander that current and past exercises do not truly exercise war plans, he was ordered to conduct a full analysis of all exercises and recommend changes so that more aspects of war plans would be tested. One general officer advised, "It is easier to [deploy] forces in an operation that have trained together under a joint command and control. A primary benefit of a SOF unified command would be the establishment of a unified SOF doctrine that would provide for joint training."

Each theater, except for Southern Command, has organized a Special Operations Command (SOC) commanded by an Army Colonel. These theater SOC's have been organized less than 18 months. The SOC's are now only planning cells that are to perform the theater peacetime and wartime planning functions; exercises, operational and logistic support. The SOC's are minimally staffed in peacetime and are to increase to full wartime complement upon mobilization. Outlined below are some limiting factors regarding the SOC's:

-- Not all of the wartime manning augmentation has been identified. [

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The European Command has identified communications requirements and has purchased half of that requirement from CINC contingency funds. The European command has also organized a communications support element "out of hide" to operate the equipment. The other four theaters rely on Defense Communications Agency assets, "borrowed items" from subordinate commands, and the Joint Communications Strategic Element (JCSE). The current communications support for those commands is so precarious that one theater senior officer stated, "communications were not sufficient, survivable, or so committed to worldwide commitments (JCSE) that the headquarters may * * * not be supported during a contingency."

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-- The Southern Command has no SOC, although they have a Special Operations planning group of 16 people, and have requested more. This command has operational responsibility over the region considered by many DOD officials as having the greatest potential requirement for Special Operations Forces.

-- A proposal was presented by one of the SOC commanders, that a way to redress the backlog of peacetime planning and better integrate the reserve camps would be a more extensive use of reserve component personnel. This approach would have the additional benefit of reducing costs for active duty personnel and may not affect the European troop strength restrictions.

IV. PROPOSALS FOR RESTRUCTURING SPECIAL OPERATIONS FORCES

Many general officers at the theater and component level and most Special Operations officers and non-commissioned officers interviewed in this investigation, were of the opinion that all SOF units should be integrated into some form of unified or specified command. Different proposals have been made from time to time to overcome operational problems that have consistently plagued Special Operations. Following Desert One (the Iranian hostage rescue attempt) a special commission headed by retired Admiral J. L. Holloway concluded that "Command and control was excellent at the upper echelons, but became more tenuous and fragile at intermediate levels. Command relationships below the Commander, Joint Task Force (JTF) were not clearly emphasized in some cases and were susceptible to misunderstanding under pressure." As an outgrowth of recommendations, a joint command was set up to provide a quick and coordinated response [ ] While this organizational structure has helped provide a basis for addressing one specific mission in Special Operations it has done little for other SOF.

The lack of definitive doctrine, which provides techniques and procedures for establishing and maintaining command, control, and intelligence during joint and combined operations was a major concern of the SOF community. Many officers believed that joint SOF doctrine was not sufficiently explicit, "We relearn the same lessons over and over." The lack of successes in past Special Operation missions; Son Tay, MAYAGUEZ, Iran, were cited as examples of ineffective command and control in joint SOF operations. Each operation may have had a preculiar problem attributed to it--Son Tay's was the lack of intelligence, Desert One's was an equipment failure--but all were thought to be the result of one individual or command not having the responsibility to properly organize, train, and equip those forces for joint operations.

Analysis of the Grenada operation, conducted by the Army as part of a Command and Control Systems Process Review, indicates that effective joint operations were still not being accomplished by the Services. [ ]

In order to establish command and control of those Special Operations Forces [ ] the Army proposed that a Strategic Services Command (STRATSERCOM) be established. This proposal would have placed all other SOF under one command which reportedly would have alleviated many SOF problems addressed in this study. This proposal, one of several, was turned down and the Joint Special Operations Agency (JSOA) was established to fill these needs.

A high ranking Pentagon official said of the Army proposal, "STRATSERCOM, made a lot of sense, but JSOA was a compromise of approximately 10 different alternatives." This individual felt the Director of JSOA should be a three star general officer and JSOA should be a full staff element of the JCS in order to have an effective impact. He also stated that as organized, JSOA is not satisfactory as it does not have administrative control or command of forces, no budget authority, and its current charter is restricted.

Many theater commands and Service component commanders interviewed stated that SOF should be placed under a unified or specified command to redress command and control problems, thus insuring that adequate training and tasking is provided; and to act as the single proponent in the Planning, Programming, Budgeting System (PPBS). Since the Services control the Defense budget and there is no single voice for SOF during the planning, programming, and budgeting cycle, SOF issues do not get the visibility necessary to address total SOF requirements. To put in perspective how little of the total Defense Budget is dedicated to SOF, one staff officer of the Joint Chiefs of Staff stated that "The yearly budget for SOF forces is about what it costs to operate the Joint Chiefs of Staff for one year." Many general officers were of the opinion that in a "pure world" a unified command might be a good idea but may not be feasible in the "real world" because of Service rivalries.

One retired officer with an extensive SOF background believes that SOF should be considered not just as a military force, but should be structured and funded to support national strategic objectives in a manner similar to the Strategic Nuclear Forces. He proposed that all SOF forces be placed under an Under Secretary of Defense who would develop military guidance based on a national strategy which would be articulated by the National Command Authority. Such forces would be considered national assets and would be funded much like the current Strategic Defense Initiative.

In November 1982, the Joint Chiefs of Staff received a briefing on "Joint Organization for Command and Control of Special Operations Forces." A memorandum dated November 29, 1982, stated, "They [the Joint Chiefs of Staff] all agreed there is a problem." This memorandum also set out that there had been no consensus as to what type of command and control would be appropriate. One of the options considered was the use of the Readiness Command as a command headquarters for SOF. During the course of this study, the feasibility of using the Readiness Command as a SOF command headquarters was discussed with Service and joint commanders and staffs.

This concept met with a lot of support. Some observations that were brought out in these discussions include:

-- This type command could provide staffing support for low intensity conflict planning and augmentation for actual operations. This may negate the requirement to add permanent active force personnel or the need for mobilization to fulfill other requirements.

-- Readiness Command's mission is to act as a supporting command that prepares forces for the five warfighting CINC's. All of the theater commands expressed the reluctance to have any units enter their theaters that they do not control. This concept may negate that concern.

-- Readiness Command already has a staff and operational base at McDill AFB, FL, thereby precluding a large initial investment. This staff could be augmented by the dissolution of some agencies such as JSOA and some Service headquarters.

-- Readiness Command is already charged to develop joint Service operational concepts and tactics, so their charter would not have to be significantly changed. Since the command already exists, Service concerns about a new organization, might be reduced.

-- Representatives from the national intelligence agencies could be assigned to this command, which would allow intelligence issues to be coordinated at one level and influence the priority of intelligence support.

-- As all SOF could be placed under one command, the organizational structure would also provide oversight of counterterrorist and Special Mission Units, allow exchange of information, allow consolidation and prioritization of specialized intelligence requirements, and coordinate research and development efforts. The preponderance of responses to this type structure were favorable. Most of the negative comments appeared to be parochial as one Service might be fearful that another Service would be in continuous control, or that a Service may "lose" forces. Considering the former comment, it was suggested that the commanding officer should rotate among the participant Services. The Army and Air Force currently have forces in the Readiness Command (Forces Command and Tactical Air Command) and there are no known complaints to this relationship.

There were concerns, though minimal, as to whether Readiness Command could assume any additional missions. Readiness Command is charged with the defense of CONUS and the command of the Joint Deployment Agency (JDA) among other missions, and concerns centered on those two primary functions. This study was unable to fully explore the incompatability of current roles and missions, though some senior military officers were of the opinion that the defense of CONUS would not conflict with a joint command of SOF. One senior Army general observed that, "If a conflict is found the defense [of CONUS] mission could be given to the Army's Forces Command." The JDA has the missions to; "provide centralized management and coordination for worldwide deployment of U.S. forces, provide employment support for all unified commanders and joint task force headquarters, and plans, coordinates, and monitors worldwide air, sea, and land movement of U.S. forces and materiel during military operations and exercises." The missions of JDA may complement a joint SOF role for Readiness Command. The CINC of the Readiness Command stated, "I am seeking no new or expanded role for Readiness Command, but am not opposed to it, and could assume it."

All individuals interviewed stated, [

] whatever organization was established, the reserve components must be fully integrated in order to realize a "total" joint force.

The Army has chartered the Special Warfare Center to conduct a study to assess both joint and Service Special Operations command and control. Though not complete, the Center has reached some conclusions and tentative recommendations. Discussing the findings, a general officer now serving on that study stated that they concluded that current SOF command and control (joint and Service) is not satisifying peacetime or wartime requirements, and the study will reportedly recommend systemic changes to redress these shortcomings. [

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It was the consensus of those interviewed during this study that SOF force capability will not improve unless (1) the command and control situation is clearly delineated and proponency is centralized; (2) specialized intelligence is provided to SOF components expeditiously; (3) a national strategy for low intensity conflicts is developed for Special Operations; and (4) it is realized that SOF are more likely to be used in the foreseeable future than conventional forces; and that such use will be in a joint operation.

The British have a long and successful history using Special Operations Forces. The Special Air Service (SAS) is considered one of the world's premier Special Operations Forces. Their mission responsibilities cover the same spectrum as U.S. SOF but the forces are centralized within one command. There were opinions expressed that the SAS has been more successful in Special Operations than U.S. SOF to wit, the elimination of the Malaysian insurgency, the rescue of the hostages from the Iranian Embassy in London, and the successful SAS operations during the Falkland's War. The SAS is a relatively small organization and by their own evaluation do not have the same comparable support and modern equipment as U.S. SOF. When queried as to why this relatively small force has such a record of success, the following principles were offered:

-- The SAS is considered national assets, and are so funded.
-- Unity of command is stressed.
-- The forces are used for only the most appropriate operations.
-- The forces are commanded from the highest level, but after being tasked, the force commander carries out the mission.

V. EXECUTIVE ORDER 12333

On December 4, 1981, the Reagan Administration published Executive Order (EO) 12333, which defined Special Activities and delineated the functions, activities, and responsibilities of the U.S. Intelligence Community. The Department of Defense has established procedures to implement this Executive Order, as have each of the Services. There is no evidence to suggest that the Services are not complying with the provisions of EO 12333, though there is reason for concern regarding how DOD oversees their implementation as there are limited checks and balances within the system. In essence,the Services provide Special Activity support without full knowledge of what the President has directed. [

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In a letter dated April 18, 1985, to the House Oversight Committee, the Principal Deputy Assistant Secretary, Department of Defense, International Security Affairs, addressed Congressional concerns on the difference between Special Operations and Special Activities, and the attendant Congressional reporting procedures. The following are pertinent points from that letter:

> "Special Operations as defined in JCS Publication No. 1 are those military operations conducted by specially trained, equipped, and organized DOD forces against strategic or tactical targets in pursuit of national military, political, economic, or psychological objectives. These operations may be conducted during periods of peace or hostilities. They may be conducted in conjunction with conventional operations, or they may be prosecuted independently when use of conventional forces is either inappropriate or infeasible.
>
> "Special Activities, on the other hand, are intelligence activities which are defined in Executive Order 12333 of December 4, 1981, as activities conducted in support of national foreign policy objectives abroad which are planned and executed so that the role of the United States Government is not apparent or acknowledged publicly, and actions in support of such activities, but which are not intended to influence United States political processes, public opinion, policies, or media and do not include diplomatic activities or the collection and production of intelligence or related support functions.
>
> "To understand fully the differences between these two concepts, it is important to understand the distinction

"between covert and clandestine activities. Covert activities are planned and executed so as to conceal the identity of or permit plausible denial by the sponsor. A clandestine activity is conducted in such a way as to assure its secrecy or concealment. Thus, the latter differs from a covert activity in that emphasis is placed on concealment of the activity rather than on concealment of the identity of the sponsor.

"The key distinction then between Special Operations and Special Activities is that Special Activities are intelligence activities that are covert and designed for plausible denial by the United States. Special Operations which if discovered are acknowledged as United States activities. No Special Operations will be conducted in a covert manner unless they are approved by the President as part of a Special Activity under E.O. 12333. Only a small percentage of Special Operations are clandestine.

"Special Activities, which are approved and authorized by the President, are conducted by the Central Intelligence Agency, unless the President in accordance with Executive Order 12333 specifically designates the Department of Defense as the lead agency (which has not been done to date). The lead agency is responsible for informing the House and Senate Intelligence Committees of the Special Activity pursuant to the Congressional oversight provisions of 50 USC 413.

"DoD personnel (including SOF) and equipment may be used to support Special Activities. However, DOD requires that notification be made to the Congressional intelligence committees as a condition for making significant support available in such circumstances. Requests for such support are always couched in terms of the specific personnel capabilities or equipment needed. The types of forces, either conventional or Special Operations personnel or equipment, are never specifically requested because it is up to DoD to determine which DoD resources best meet the requested support requirement. In most instances the support provided is conventional rather than special operations personnel or equipment.

"During peacetime, Special Operations will only be conducted by the Department of Defense upon Presidential approval to meet a crisis or hostilities. Normally a Special Operation will be accomplished in conjunction with a larger military operation (ex. Grenada). Such operations are approved by the President in his constitutional capacity as Commander-in-Chief. Upon the advice and assistance of the Joint Chiefs of Staff, the President "approves, through the Secretary of Defense, the conduct of the operation (10 USC 124).

"Also during peacetime, Special Operations Forces train for their wartime mission by supporting regular US armed forces or the forces of foreign countries under the Foreign Assistance Act or the Arms Export Control Act. For example, an Army Special Forces unit may mark a temporary landing zone to receive DoD supplies as part of a peacetime exercise. Similarly, Special Forces personnel are often assigned as part of a Military Training Team in a foreign country, which reimburses DOD for those services through the Foreign Military Sales Program.

"As in the case of all deployments of U.S. Armed Forces, Special Operations and Special Activities involving U.S. Armed Forces undergo a thorough legal review to determine the application of the War Powers Resolution and other appropriate statutes."

Department of Defense regulations do not currently allow civilian Service secretaries or members of their secretariats to see the actual provisions of a Presidential Finding. This is in response to a Presidential Directive that strictly limits access to these Findings by name. Only the general parameters of the Presidential Finding, which establishes that DOD is to provide support to the Central Intelligence Agency (CIA), or other non-DOD agencies, for an operation/activity, are conveyed to the Services via the Director, Special Advisory Staff. After the Services receive this information they formulate what are called "Terms of Reference" outlining the possible impact of the requested support and how the Service(s) will/or can support the request. There are instances when the CIA has not accepted the Terms of Reference and thus discontinued service support.

As the Services do not see the actual Presidential Finding, they must, as one Service staff officer says, "Take on faith the accuracy of what we are being told." In addition, the Service representatives are not normally present when the Presidential Finding and the operation are briefed to the Oversight Committees by the Central Intelligence Agency. Thus the Services are not privy to what the committees are told by the CIA. The result is the Services may not in detail explain the extent and impact that an operation or activity may have on the Service. It was also noted that in the past the CIA has turned down operational concepts when a Service has raised the necessity to inform Congress under the provisions of the War Powers Act.

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Mr. **Chappell**. Have you had a chance to see that S&I report?

Mr. **Latham**. Yes, sir. I have read it.

REQUIREMENT FOR SPECIALIZED AIRCRAFT

Mr. **Chappell**. Let me run down some of the items mentioned in the summary, if I might.

The report says that counterterrorist special force capability meets projected requirements. However, the current and planned force structure of more traditional SOF units does not. ———.

You alluded to this. Would you amplify a bit?

Mr. **Latham**. Yes, sir. We recently——

Mr. **Chappell**. Do you agree with the statement?

Mr. **Latham**. ———.

So everything else could be as certified in that airlift report.

We have made considerable progress in this area. There are ———.

Mr. **Chappell**. You have planned adequately for that in your budget?

Mr. **Latham**. Yes, sir, we have. When the certification was signed and sent over here, Mr. Taft personally readjusted the dollars in the FYDP. For example, ———. Each of the service budgets has been adjusted accordingly.

READINESS

Mr. **Chappell**. I notice that the report also says not only is the overall ———.

Do you agree with that statement?

Mr. **Latham**. I don't know whether the number is ———. Today there have been improvements since the gentleman that did that report for you several months ago.

I would comment that in these special airlift units there are ———. So it is a peculiar situation.

I would look at the SOF airlift and the readiness ratings and so on with a different view than I would the active forces in a combat squadron. That is often overlooked in these C–1, C–2 ratings. They need to be looked at in more detail, such as flying hours available, before we make a judgment on it.

Mr. **Chappell**. Have you had a chance to do that? Have you made a judgment on that?

Mr. **Latham**. Well, yes and no. I have not personally looked at every unit as to its readiness. I have summarized in my statement the specification of the Air Force units today as to their readiness status. That is an updated set of numbers as you have requested.

Mr. **Chappell**. Readiness of active Army SOF units ———.

Would you comment on that?

Mr. **Latham**. Yes, sir.

I think there are some valid concerns that are expressed in that. The language proficiency of the units is not at all what we would like to have it to be. The Army has recognized that problem. They have taken action to increase ——— the number of seats at the Defense Language Institute out at Monterey, and they have instituted a program for language training at the active units.

So language deficiency is a serious problem. We are working on it.

In the ratings, it is not part of the fact of whether the unit is ready or not. In other areas such as in communications, there are deficiencies in terms of the amount of equipment available that is being fixed as rapidly as possible ———.

There are a number of other initiatives in the communications area ——— it is being addressed, and there is money in the budget to do it.

FUNDING LEVELS

Mr. **Chappell**. Further, the report says, "In recognition of the inadequacies and in response to congressional and DOD pressure, each of the services has embarked on a planned SOF enhancement effort. The projected five-year costs are: ———.

Do you feel that those figures are adequate?

Mr. **Latham**. No, sir, they are not. As I just mentioned, the numbers have gone up substantially. The Air Force numbers, ———.

Mr. **Chappell**. You have put the requests in the budget though already?

Mr. **Latham**. Yes.

Mr. **Chappell**. For the amounts you just stated?

Mr. **Latham**. Yes.

SUSTAINABILITY

Mr. **Chappell**. Sustainability is ———.

Have you made the proper request for that?

Mr. **Latham**. That is a good point. In fact, we could write the same statement about other components of the services because it has been difficult, as you know, to rebuild from what we inherited in 1981 to get the sustainability and readiness up. It is improved dramatically in all components of the services over the last four or five years.

In particular ———. We know that.

There are ——— new sets that will be issued in the next fiscal year to try to rectify that.

So there are certain sustainability problems that plague us, and we are trying to address that.

Again, in terms of the SOF master plan that each of the services have and the money budgeted, we believe in this FYDP that will be cured.

PROCUREMENT OF EQUIPMENT

Mr. **Chappell**. What about competition for the procurement of SOF equipment? The S&I report comments, "Many of the existing shortages could be alleviated at less cost and in a timely manner if, where appropriate, the DOD would procure civilian off-the-shelf, nondevelopmental items for SOF."

Do you agree with that?

Mr. **Latham**. Yes, sir, I do. In fact, that is done more and more. General Schwarskopf can comment, but the Army has an accelerated procurement system for ——— so that area is being addressed. I support the idea of NDI-type civilian equipment if it can be used.

We are using civilian-developed parachutes and certain civilian-developed types of clothing, boots and things of that nature. We can do more of that.

READINESS

Mr. **Chappell.** "The capability of the services' ——— is poor," stating that there is a "a lack of trained personnel, equipment, and training opportunities."

Do you agree with that?

Mr. **Latham.** Yes, sir.

Mr. **Chappell.** What corrections have you made?

Mr. **Latham.** That is one of the most difficult problems we face because in this area of special operations forces there are specialized training requirements for personnel that are peculiar; for example, language, and medical technicians. ———.

JOINT TRAINING

Mr. **Chappell.** What about joint training? Do you feel the joint training now in place is adequate?

Mr. **Latham.** Let me ask General Rice to answer that. I am not qualified.

General **Rice.** No, sir, not at this particular time.

Mr. **Chappell.** You can move up to the table, if you like.

General **Rice.** That is all right. We have been getting better. We have made significant improvements over the last two years to improve our joint training because it is going to be ———. There has been a significant improvement, I think, in SOF participation in both types of exercises.

Mr. **Chappell.** How would you characterize the capability now of that training?

General **Rice.** Well, on a scale of one to ten, sir?

Mr. **Chappell.** Yes.

General **Rice.** Probably ———.

Mr. **Chappell.** You are working on that now?

General **Rice.** Absolutely.

Mr. **Chappell.** What specifically are you doing?

General **Rice.** Sir, beginning with my level at the JCS level, ———.

It is continuous, sir, and we are working on it.

Mr. **Chappell.** Do you feel you have adequate money in the budget for that purpose to bring you up to your ———.

General **Rice.** No, sir. I think the future will demand more money. As they get bigger, they require more dollars, more people are involved, and if I am not mistaken, our budget has been cut. So if we cut money, sir, ———.

Mr. **Chappell.** What size forces are you involving in this?

General **Rice.** Sir, it varies. ———.

Mr. **Chappell.** What kind of cooperation have you had between the services? What interest have you had in the services for the joint exercises?

General **Rice**. Good cooperation, Mr. Chairman, all the Services are participating.

Mr. **Chappell**. We have information that the ———. Is that true?

Captain **Grabowsky**. That is not the case. We did ———.

We participate in ———. When we have budget constraints, we tend to favor operating in the ———.

The report is just simply wrong. We made the point we would favor increased participation in ———.

General **Rice**. Mr. Chairman, I was participating as an observer in the last ———.

PROCUREMENT OF EQUIPMENT

Mr. **Chappell**. What about joint procurement of your equipment? Do you need to get specialized equipment that goes just with this sort of operation and can you save money if you went to joint procurement?

Mr. **Latham**. Let me give you an example. In communications, command, and control, there is a need to have a fundamental requirement, and that is to have interoperability between the forces. To ensure that we have common radios, common communications security devices and so on. We are outfitting the Army, Navy, Air Force and Marine Corps with ———.

The same is true of many other communications equipments. Now the special forces need specialized equipment and again we must assure interoperability.

The radios may be built by a different manufacturer, but they are interoperable. That is the bottom line we are trying to get to. They are specialized in the SOF area and usually procurements are small so there is not a great deal to be saved by having a joint program.

When it is a massive buy like we are doing in the ——— radios across all the services, it makes sense to have a joint program of some kind at least to ensure full interoperability across the board. But joint procurement can help in some cases.

INITIATIVE 17

Mr. **Chappell**. The S&I report says with reference to Initiative 17—are you familiar with that?

Mr. **Latham**. Yes.

Mr. **Chappell**. What is that?

Mr. **Latham**. Initiative 17 is one of a larger number of agreements that were put together by the Chief of Staff of the Army and the Chief of Staff of the Air Force. In particular, this infamous 17 was one in which the Air Force and Army agreed that over some period of time unspecified, the Army would assume a mission called the long-range rotary mission for the special operations forces, helicopter missions for long-range case for infiltration and exfiltration, and it would be transferred eventually from the Air Force to the Army.

Mr. **Chappell**. Comment is made here that, "What began as a response to the dual procurement of similar helicopters for different missions has resulted in the development and procurement of different helicopters for the same mission."

Is that true?

Mr. **Latham**. Well, I guess what they are referring to in that situation is back to this Initiative 17. Currently the ———.

That will have specialized avionics and sensors on board and so on to perform that ———. So in a sense there is an example of two different helicopters to do the same mission.

Now, the Air Force helicopters, ———. That was in fact the original mission which they were geared for many years ago.

So there are differences in the helicopters, with some similarity in avionics and sensors, but the helicopters are different.

Mr. **Chappell**. Is that detrimental to the——

Mr. **Latham**. No, I don't think so, sir. The defense guidance currently calls for the ———.

So I don't think that is a bad situation in that the Army, if they do assume the mission will have their own equipment common across the entire Army.

In fact, the plan in the Army now that Mr. Ambrose has asked for, is to equip all ———.

So there will be great commonality across the avionics in helicopters. That is why it makes more sense to do that.

Mr. **Chappell**. Thank you.

Mr. Dicks?

Mr. **Dicks**. I think I understand, but did Initiative 17 direct the ———.

Mr. **Latham**. It didn't direct it. It was in a joint agreement between the two Chiefs of Staffs of the services. OSD was not involved in the generation of the memoranda: the memoranda that resulted from the meetings between the chiefs.

So this was a mutual thing.

Mr. **Dicks**. This was an agreement they worked out?

Mr. **Latham**. Yes, sir. We didn't direct anything. It was something they worked out and presented to us.

Mr. **Dicks**. What are the advantages of this plan?

Mr. **Latham**. I think the advantage of the plan is that the ———. They have to demonstrate that.

Mr. **Chappell**. Let me ask you this question. It is our understanding that options selected ———.

It that true?

Mr. **Latham**. It is more expensive. That is correct, sir.

Mr. **Dicks**. Why is that?

Mr. **Latham**. The mission of the various aircraft that are in the different approaches.

Mr. **Dicks**. You are taking existing aircraft and upgrading them, isn't that what you are saying?

Mr. **Latham**. ———.

Mr. **Dicks**. They are a much more capable helicopter than the ——— helicopter.

Mr. **Latham**. I think they are equivalent roughly in performance. They both would be able to ———. They are about equivalent in capability in terms of the two flying machines.

Mr. Chappell. What is the logic behind the transfer?

Mr. LATHAM. The difference is that you have ———. The rest is pretty much the same.

There are ——— in there as well. They would put the money in for them. There is an OSD account for special sensors for those.

Mr. DICKS. Why was the decision made then?

Mr. LATHAM. The decision was made because we felt that overall it provided the most capable force, and made more sense to eventually transfer the mission to the Army. Although, as our report states, if the Congress in their judgment feels that this is not the proper course of action, and we are obeying the language of the law you put in last year, Mr. Addabbo wrote a letter——

Mr. DICKS. Would you review that language? What was that?

Mr. LATHAM. The language was do not make a decision until you come over here and consult with the Congress. That is the bottom line. We are doing that today in fact because the decision is that we presented an option in the SOF aviation report, and there are no ———.

If you don't think that is the right thing to do, then as the SOF report says, we will have to abide by whatever judgment you make.

Mr. DICKS. You think it is not the best thing to do to have the Air Force running these helicopters. Would it be better for the Army?

Mr. LATHAM. Yes, sir, I do. Eventually I think it is a long-range better thing in terms of time for us to transfer the mission to the Army.

JOINT SPECIAL OPERATIONS CINC

Mr. CHAPPELL. Let me see if I can come quickly to the end of my questioning here.

The staff S&I report suggested that a consideration by the committee requiring DOD to establish a single proponent with sufficient authority to establish an effective and fully resourced special operations force capable of joint operation. What is your comment on that?

Mr. LATHAM. I am not sure what they would like to have. They have a single proponent in myself and my office in that we watch out for not only the R&D, but the procurement items and O&M, and ready moneys and so on for the SOF forces.

I am not sure exactly what they would prefer to have there, but now I can represent them on the DRB and so on. They do have a proponent in a single point of contact for resources.

FUNDING LEVELS

Mr. CHAPPELL. They suggest the possibly of fencing funds to support an enhanced DOD special operations force to specifically include the ———. What is your opinion?

Mr. LATHAM. I think that is absolutely the wrong thing to do. Fenced moneys are a thing of the past with the arrangements of how we have had to handle the budget cuts and so on in recent times, even on programs you are very familiar with like ———. It really isn't anymore.

As the budget cuts come in and OMB decides or you decide in the Congress, up and down goes the amount of money in that account. I don't see a way to fence money any more in the Department of Defense.

PROCUREMENT OF EQUIPMENT

Mr. **Chappell**. What about their suggestion of authorizing procurement for commercial off-the-shelf equipment for SOF's?

Mr. **Latham**. Fine. We have that authority now, and we are moving more and more to do that. I think that is a smart move. If there is good equipment out there, let's get it and shorten the procurement cycle in so doing.

Mr. **Chappell**. Mr. McDade.

READINESS

Mr. **McDade**. Thank you, Mr. Chairman.

I want to welcome you and your colleagues, Mr. Secretary, to the committee this afternoon.

I want to talk about Air Force readiness. According to testimony we had last year, readiness figures indicated that ———.

What specific action has been taken to improve this situation?

Mr. **Latham**. It has gotten much better and I will have General Williams comment more, but in Chart 10 of my statement is the current status of Air Force SOF readiness.

Mr. **McDade**. What page is that?

Mr. **Latham**. It is Chart No. 10 at the end of the statement, sir. That is the status as of today of the Air Force active components, Air National Guard and Reserves, and the ——— are listed.

Mr. **McDade**. The committee S&I staff reviewed the Air Force January 1986 readiness levels for ———.

Why does it appear that things are getting worse, not better?

Mr. **Latham**. Let me turn to the Air Force.

General Williams, would you comment?

General **Williams**. Thank you, Mr. Latham.

As Mr. Latham mentioned earlier, you have to keep in mind the size of some of our units are very small. If you move a platform into a modification which is to improve its capability over the long term, it affects the C status in the near term. The condition as we move to training levels, the training levels and proficiency of the crews can affect drastically the rating.

As we task these forces to participate in joint exercises sometimes that reduces their capability to train additional mission-ready pilots.

The report is correct, but I think that we have to view this in the long-term. Statistically these numbers move around a great deal because of the small numbers involved, but I would appeal to you to view in the long term what the readiness probabilities are.

I think we have taken a number of steps and I would like to mention a few of those.

Mr. **McDade**. Please.

General **Williams**. We have a liaison officer for logistics command, at Hurlburt. We have a special office at Warner-Robbins that has 39 people authorized and all but 11 of them are filled.

We have an office at Wright-Patterson, Air Force logistics command headquarters with three people. These three offices I am referring to, their sole full-time job is to enhance readiness of SOF in the Air Force.

In addition, we have initiated special experience identifiers to be sure the enlisted personnel backgrounds are kept in the files so their expertise can be applied, because they have the SOF background.

We have increased the manning by ———.

These people should be in place during fiscal year 1987. We have depot maintenance float times for the ———.

I could go on and I will be happy to, but my point simply is that there are a number of initiatives we have taken, 14 in count, and in ——— to really take an impact that you will visibly see in the C rating which translate into what looks to you like readiness.

Mr. McDADE. Well, we want to keep your attention on it. It apparently is a serious problem and we have reports in the Armed Forces Journal about an inspection, I am sure you saw it, and it was cancelled. I don't know if that is the fact or not, but we want to keep our hands in on it because we are very interested in working with you to get the readiness up.

We even see it in shortage of spares. Are you saying that the shortage of spares can't be remedied for ———? Is that the same problems?

General WILLIAMS. It is the same kind of problem. In some cases, we have limited those but with the older equipment, the airplanes average over 20 years old, and the avionics equipments do wear out. They are unique in some cases. So there isn't an off-the-shelf availability for those types of equipments.

So, yes, in some cases it will take another ——— but rest assured we have a full-time effort doing into this. I might mention here that the Air Force in February appointed a special task group numbering 45 people, of which I am the head, to assure we are going everything possible so SOF in the Air Force are being readied and the future look to those forces will satisfy the requirements.

REQUIREMENT FOR SPECIALIZED AIRCRAFT

Mr. McDADE. We will keep in touch with you about it.

Let me ask you, last year Air Force witnesses indicated that the fiscal 1987 budget would include funds for four MC–130 aircraft to support ———.

Is there in fact money in the budget to procure at least four C–130 aircraft for this purpose?

General WILLIAMS. There is and we are planning to buy in the 1987 budget over the FYDP in the President's budget, there are ———. As Mr. Latham mentioned earlier, with the OSD revitalization certification package that came over there is an additional ———. That makes a total of ———.

So to give you a feel again, and he mentioned it earlier, we have gone from ———. So we think we are stepping up rather robustly and realistically to satisfy our Air Force SOF requirements.

Mr. McDADE. On December 9 last year, the Air Force Aeronautical Systems Division sent a one word message to higher headquarters that sounds similar to messages we have sometimes sent. It said, "Help." Are you familiar with that one?

General WILLIAMS. I am familiar with that one.

Mr. McDADE. What was going on?

General WILLIAMS. They needed funds released so they could get on with the program. And those funds now, I believe they sent the request for reprogramming over here, it is a $73 million from our ———.

Mr. McDADE. Have there been things going on that caused the cryptic message to occur, or what was happening?

General WILLIAMS. They needed money.

Mr. LATHAM. They were running out of money. Simply that.

Mr. McDADE. They must have asked for it before; there must have been a snafu before. That is what usually what we do, we say help.

General WILLIAMS. I would say that in the competition for limited funds, there is always some snafus.

Mr. McDADE. Are they now sending you messages that say, "thank you"?

General WILLIAMS. I think they are preparing them. We have not received them. We need help, though. I want to make the point we need help in the reprogramming that your staff is working for the $73 million———.

READINESS

General RICE. May I make one comment on the readiness?

Mr. McDADE. Please.

General RICE. The Chairman of the Joint Chiefs is briefed on the third Monday of every month as to the status of ———. So it has direct personal interest of the Chairman of the Joint Chiefs, both General Vessey and Admiral Crowe.

Mr. McDADE. How long has this been going on?

General RICE. Sir, we started to brief that in the latter part of 1984.

Mr. McDADE. That is good news. You can see on this side of the table we are getting a lot of signals that cause concern, and so I am delighted to hear that kind of cooperation is going on, because it is essential to have the program succeed.

Thank you, Mr. Chairman.

Mr. CHAPPELL. Mr. Livingston.

Mr. LIVINGSTON. I don't have any questions, Mr. Chairman.

JOINT SPECIAL OPERATIONS CINC

Mr. CHAPPELL. Let me ask you a question with reference to command, Mr. Latham.

Back prior to the establishment of the Joint Special Operations Agency, consideration was given by the Joint Chiefs of Staff to placing all Service Special Operations Forces under the Readiness Command at McDill Air Force Base, Florida.

The preponderance of personnel interviewed by the S&I staff were of the opinion that there continues to be a requirement for a Special Operations Forces unified command to address such joint problems as doctrine and training.

Is it feasible for Readiness Command or some other existing command to function as a Special Operations Forces unified command.

Mr. **Latham**. That was looked at ———. Currently there is an ongoing JCS re-examination again to see if there are some changes that should be made in the command and control structure of SOF and we owe you a report on that. They have indicated to me that they expect to have that completed by about June, so I think the jury, so to speak, is still out on just what the optimum structure that we could come up with in terms of the command and control on these forces.

Right now, as I say, it is under active consideration ———.

FUNDING LEVELS

Mr. **Chappell**. If I understand the organization and structure, you are in charge of resources, is that right?

Mr. **Latham**. I am hardly in charge of anything, but I oversee resources. That is the neat word.

Mr. **Chappell**. We all know better than that. We watched you operate here a long time.

Mr. **Latham**. I am just a little farm boy.

Mr. **Chappell**. Oh, boy. That is when you better grab your pocketbook, fellows.

Mr. **Latham**. Yes, sir, I watch the resources and in fact you all have been nice enough in this area of SOF that we have an OSD account of R&D moneys that we use the seed money to the Services, sort of like DARPA does, to get SOF initiatives going in areas that are specialized equipments or camoflauge things or whatever, for the various Services.

We dole that out, hundred thousand here, million there. It is a small account. Then in general, there is ———. we have asked for for 1987 that we prepared the congressional justification for, and we tend to, as I say, oversee the resources. When it comes to the DRB issue or anything to do with that, I am the fellow that gets tagged with worrying over that problem.

OVERSIGHT OF SOF POLICY

Mr. **Chappell**. Who gets tagged with policy and program?

Mr. **Latham**. The Under Secretary for Policy, Dr. Ikle and under him the ISA office, and that is currently Noel Koch.

Mr. **Chappell**. They are not represented here?

Mr. **Latham**. There are representatives here today, yes, sir. In fact, they were very cooperative and we worked together on the joint statement for the record, and so on, so the statement represents an OSD perspective with the Services on this area.

This is not just a C3I statement for the record, sir.

JOINT SPECIAL OPERATIONS CINC

Mr. **Chappell**. Following up on the question asked a moment ago about joint command——

Mr. **Latham**. Yes, sir.

Mr. CHAPPELL. Did the Iranian hostage rescue attempt teach us anything in that area, or is that an example for better unified efforts?

Mr. LATHAM. I guess the main lesson learned in that sense is that if you are going to attempt some highly specialized mission, it would be helpful to have people who are highly trained, properly equipped and ready to do it on a very short notice. That is the posture we are attempting to put ourselves in, whereas that had to be pretty much put together from scratch.

I think the main lesson learned is to get ready for the operations and keep a capable force ready to do it.

Mr. CHAPPELL. We agree, but after that rescue attempt, ———. Does it not logically follow that a separate command would also improve our general Special Operations Force capability?

Mr. LATHAM. I don't believe it would but I think the jury is out on that. We will let the Chairman decide, but I am of the opinion that it is not the right way to go.

Mr. CHAPPELL. Mr. McDade?

ARMY READINESS

Mr. McDADE. Thank you, Mr. Chairman.

I want to chat about Army readiness at this point. On July 5, 1985, the Deputy Chief of Staff for Operations directed that the Army review the readiness posture of Army Special Forces, determine the shortcomings, and establish goals of the necessary remedial action.

Is it true that in June 1985 ———?

General SCHWARZKOPF. That is a correct statement. ———.

Mr. McDADE. That is an impressive turnaround, and we commend all of you for the achievement that you have done in turning around so rapidly. It is a job well done.

Our S&I group raised a question you mentioned briefly, and that was serious deficiencies in specific areas they believe still remain.

Let me comment and you can tell me what you think. For example, ———. Is that an accurate statement today?

General SCHWARZKOPF. That was at that time. It is in the process of being remedied now. Right now all of our units are ———. We report at the battalion level. ———.

Mr. LATHAM. There is a procurement underway for the REMBASS system to fix that problem.

Mr. McDADE.———. Is that still a problem?

General SCHWARZKOPF. There is a limited shortage of ——— but for the most part that has been corrected.

Mr. McDADE. What do you mean by minimal?

General SCHWARZKOPF. There are various grades of ———.

Mr. McDADE. Is the problem going to disappear very soon?

General SCHWARZKOPF. Yes, sir.

Mr. McDADE. ———.

General SCHWARZKOPF. ———.

Mr. McDADE. ——— for training. Is that accurate?

General SCHWARZKOPF. It depends on the level, sir. We have ——— out there for training and we are procuring it all the time. ———. I think that is a correct statement.

FUNDING LEVELS

Mr. **McDade**. Is the 1987 budget request going to remedy all these problems, General?

General **Schwarzkopf**. Yes, sir.

Mr. **McDade**. Do you have enough money to take care of all these difficiencies?

General **Schwarzkopf**. Yes, sir.

Mr. **McDade**. Good for you.

Mr. **Latham**. Be careful. I think the long-term correction of these deficiencies is more than one fiscal year, and we really have to look over a period of time here. ———. So it is a matter of looking out over, I think, several fiscal years until everything is fixed.

For example, the question earlier about the reserves and the equipment for the reserves, that is a long-term thing. That is going to take more than one fiscal year.

READINESS

General **Schwarzkopf**. ———; active and reserves.

Mr. **McDade**. That is good to hear. ———. Is that still a problem for you?

General **Schwarzkopf**. ———.

Mr. **McDade**. ———?

General **Schwarzkopf**. We are in the process of remedying that. ———.

Mr. **McDade**. Well done. Thank you, Mr. Chairman.

Mr. **Chappell**. Mr. Secretary we have a number of questions for you to respond to for the record. Do you have any tough questions you want us to ask you?

FY 1987 DOD BUDGET

Mr. **Latham**. I was waiting for you to get tough once here.

Let me say that while I have a chance, if you would like, for negotiation, don't let the Congress decimate the budget like it appears is happening. We really are in trouble if you go through with this big reduction that is contemplated.

We come in with 311——

Mr. **Chappell**. You don't want Gramm-Rudman-Hollings to trigger?

Mr. **Latham**. Absolutely not. Without Gramm-Rudman-Hollings triggering, it sounds like Congress has their guns cocked and will do worse yet to us.

The $295 billion that the Senate Budget Committee voted out is devastating enough coming at $311 billion. We have seen reports of the House side looking at a $275 billion number.

In 1986 we ended up with a 2.6 percent negative situation, and that is the first time in 15 years. You can take one year like that and recover, but if we are going to continue this, you are just going to gut the DoD.

What we have tried to do over the last four or five years is going to come apart very rapidly. If Gramm-Rudman-Hollings triggers, some 300,000 people come out of the DoD, and a great deal of those will be service personnel, we will start down the road of unilateral disarmament.

Mr. **Chappell**. What figure do you think it should be?

Mr. **Latham**. I am going to support the President's budget at $311 billion. Are we going to die if we take out a billion or two or three? The answer is no. But I don't think $275 or $295 billion is the right number.

We fought long and hard in the DRB last summer to come in with that number. Even at $295 billion you really hurt us. You are into the muscle.

Mr. **Chappell**. The real world seems to be that in order to keep it from triggering, it will take a combination of cuts and taxes. So far the President is not very helpful on the tax increase.

Mr. **Latham**. Instead of calling it a tax increase, why don't we hire a Madison Avenue marketing guy and talk about tax refinements or something?

Mr. **McDade**. Revenue enhancements, they have already hired the guy.

Mr. **Chappell**. But Gramm-Rudman-Hollings won't let us get to it.

Mr. **Latham**. We have no flexibility in Gramm-Rudman-Hollings in 1987.

Mr. **Chappell**. We agree with you.

Mr. **Latham**. I am extremely worried——

Mr. **Chappell**. I don't see how we are going to do it unless we get a combination of cuts and taxes.

Mr. **Latham**. I would sure look at the non-defense part of the budget as well.

We seem to be the guys having to take 50 or 60 percent of the load. I think we ought to look at the other side as well. I am making a plea that it is a very serious situation.

FUNDING LEVELS

Mr. **McDade**. You had to comply with Gramm-Rudman-Hollings last year.

Mr. **Latham**. Yes.

Mr. **McDade**. Where did the cuts occur? What did it do to Special Operations?

Mr. **Latham**. I am glad you asked. We didn't touch them. We went back and fenced it. In fact, Mr. Taft issued a memo a couple weeks ago that where there would be cuts, which we didn't realize had been taken that affected Special Operations, they would be fixed. He told the Services to put it back to the original 1986 level so we were able to protect in 1986 because of the flexibility in the Gramm-Rudman. Some C3I programs we protected, but all that goes by the board in 1987.

Mr. **McDade**. The flexibility is not there?

Mr. **Latham**. That is right. In the Defense Agencies, for example, we protected SDI, and we protected it against any of the fiscal year 1986 undistributed R&D cuts and Gramm-Rudman, so some of the Defense Agencies took cuts in their R&D of up to 27 percent.

Captain **Grabowsky**. I have a point, that all of SOF comprises ——— of the DoD budget. When you are going into these programs and looking at this, you are dealing with ——— numbers, but they are very critical ———. You have ——— percent of program growth.

I watch the ramp eaters come in and say, there is too much program growth, and we just bought one more.

Mr. LIVINGSTON. Mr. Secretary, my greatest concern is that you are going to lose your flexibility as you get into the 1987 budget. You were able to overcome the problems in 1986. My gravest concern about Gramm-Rudman-Hollings is that, frankly, congressional interest items are going to be protected, we in our wisdom determine that certain aspects of the defense budget are sacrosanct, at the expense of all other accounts.

If we didn't have this in there, and if you were permitted flexibility—when I say you, I am talking about the entire Department, couldn't you find certain programs to just possibly eliminate and solve the problems we have with the budget and even meet the requirements of Congress and Gramm-Rudman-Hollings?

Mr. LATHAM. I am not sure. I think we would strongly support fixing the Gramm-Rudman Act so we could have the flexibility. Having the flexibility across all the accounts, everything could be touched including closing bases and so on. You could get some money out. How much we could get out, I don't know, but in looking at things like base closure, it costs money up front to do it, and you save money in the outyears.

Whether we could get out anywhere near the amount of money asked for under the trigger, as much as 20 percent, I doubt we could get that out.

Mr. LIVINGSTON. It makes your life more difficult to say that you can't touch something.

Mr. LATHAM. It absolutely does.

Mr. CHAPPELL. Gentleman, thank you very much.

Mr. Secretary, we appreciate your testimony.

Please answer the balance of the committee questions for the record.

[CLERK'S NOTE.—Questions submitted for the record and the answers thereto follow:]

JOINT SPECIAL OPERATIONS CINC

Question. Prior to the establishment of the Joint Special Operations Agency (JSOA), consideration was given by the Joint Chiefs of Staff to placing all Service Special Operations Forces (SOF) under the Readiness Command at MacDill AFB, FL. The preponderance of personnel interviewed by the S&I staff were of the opinion that there continues to be a requirement for a SOF unified command to address such joint problems as doctrine and training. Why was the decision made to establish JSOA, which is only an advisory arm of the JCS, instead of a separate CINC for SOF forces as proposed by the Army?

Answer. The JCS concluded that a change to existing command and control arrangements by the establishment of a unified or subordinate joint command was unwarranted. They also concluded that enhancement to staff management which were warranted could be achieved effectively and at reasonable cost by the establishment of JSOA.

Question. With the increased participation of the unified commands in the planning, programming and budgeting system, would SOF benefit from a single proponent for SOF on the Defense Resources Board?

Answer. ———. The Committee felt this was not acceptable. The Committee directed the Secretary of Defense to designate ———.

When it comes to representation on the Defense Resources Board (DRD) ASD(C^3I) is the single proponent for all Research, Development and Acquisition programs, for Special Operations Forces as well as all C^3I programs. The Under Secretary of Defense for Policy and the Assistant Secretary of Defense for International Security Affairs are the proponents for Special Operations policy development, policy objectives and force structure.

Question. The specific U.S. Special Operations, problems have differed from Son Tay, to Mayaguez to Iran, but, according to the S&I report, "all were thought to be the result of one individual or command not having the responsibility to properly organize, train, and equip those forces for joint operations." Do you agree with this conclusion?

Answer. No. Son Tay was an extremely well executed military operation; strategic intelligence was the problem. Few SOF were involved in the Mayaguez operation; it was primarily a conventional operation. For Iran, a joint task force was formed in CONUS to conduct the operation in the European Command area of responsibility. The Holloway Commission concluded, "The ad hoc nature of the organization and planning is related to most of the major issues and underlies the group's conclusions."

Question. According to an internal Army review after the Grenada operation, "As evidenced during URGENT FURY (Grenada)—we are apparently incapable of rapidly establishing effective joint command and control, communications, and intelligence systems." Why do we lack such a fundamental capability when we have 2,000,000 active duty personnel and a $300 billion defense budget?

Answer. Many of the reported problems with rapidly establshing a joint command, control and communication (C3) capability have been traced to an extremely compressed timeframe for planning and "close-hold, limited need-to-know" security procedures that kept many knowledgeable joint C3 personnel out of the planning phase.

Planning procedures and joint tranining programs have been reviewed and many improvements have been made; including development of joint communications operations plans and emphasis on C2 realism in joint exercises.

Question. What is being done to develop such a capability?

Answer. For maximum effectiveness, systems must be used as designed. In the case of URGENT FURY, use of an existing CONPLAN in which command, control, communications and intelligence (C3I) systems are specified, may have alleviated many of the problems. Potentially effective joint C3I systems existed at the time of Grenada, and they exist now. They are not, and will never be perfect, but improvements are being made.

The Joint Staff is currently working to establish an Office for Joint Interoperability specifically chartered to work interoperability problems in the areas of: joint doctrine, joint tactics, techniques and procedures, joint exercises/training, joint planning, and the development and acquisition of interoperable equipment/systems.

To address SOF specifically, C3 interoperability problems have been aggressively pursuend through the Joint Special Operations Forces C3 Interoperability Program (JSOFC3IP). That program was initiated 11 July 1985. A working group was established which includes representatives of JTC3A, JSOC, the Services, C3S, and the CINCs. A FY 86 update has been developed, with program requirements and milestones.

Question. The comment was made to the S&I staff by several general officers that in a "pure world" a unified command might be a good idea but may not be feasible in the "real world" because of service rivalries.

Do you believe that a single unified command is a good idea?

Answer. There are advantages and disadvantages to unified commands. The Joint Staff routinely reassesses command, control, and management arrangements to seek the optimum arrangement. Such an analysis for SODF is ongoing.

Question. Would it have a chance of being effective if it were established?

Answer. Any answer to this question would be subjective at best.

Question. What role does JSOA play if its does not have administrative control or command of forces, has no budget authority, and has a charter which is restricted?

Answer. JSOA advises the Joint Chiefs of Staff on all matters pertaining to special operations and the military activities related thereto, including national strategy, planning, programming, budgeting, resource development and allocation, joint doctrinal guidance, exercise and readiness evaluation, and employment of forces.

Question. If a separate CINC for SOF were to be established, how would you integrate the reserve components to create a truly joint force?

Answer. If such an organization was formed, the reserve component forces would have wartime augmentation tasking much as they do under the present system.

Question. The Army Special Warfare Center is completing a study which assesses both joint and service Special Operations Command and control.

When will this study be completed?

Answer. The study will be completed in June 1986.

Question. ———?

Answer. The draft study has not been approved by Department of the Army. Specific recommendations would be speculative.

Question. In the fiscal year 1986 appropriations bill the Congress directed that the Secretary of Defense report the feasibility of creating a single command structure for Special Operations Forces. This report was to have been completed and submitted by March 1st. To date it has not been received.

(a) When do you anticipate that the report will be delivered?

(b) Can you give us a summary to date of what your tentative conclusions are with regard to establishing a single Special Operation Force command?

Answer. The report on a single command structure for Special Operations Forces is still being staffed. As we consider this a very important issue, we want to ensure that the various proposals are throughly evaluated and that all key players are heard. Therefore, at this time, we cannot say with certainty when the report will be forwarded, but we estimate it will be in June.

Because of the complexity of this issue and the variety of options under consideration, it would be premature to describe the results of our review at this time since the central conclusions remain to be drawn.

Question. Since the Readiness Command already has a staff and operational base the MacDill Air Force Base, would the need for large initial investment be precluded if the Readiness Command became responsible for Special Operations Forces units?

Answer. The option of placing SOF under a unified command is being studied. Initial investment costs associated with establishing a unified command might be reduced.

Question. If the Readiness Command were given control of these units, would it make sense to disestablish the Joint Special Operations Agency and give those responsibilities to the Readiness Command?

Answer. No. The requirement for coordination with the Joint Staff, and for providing advice on SOF matters to the Joint Chiefs of Staff would still exist. A staff organization such as JSOA would still be required.

Question. The Readiness Command is already charged with developing joint service operational concepts and tactics. Does this mean that their charter would not have to be significantly changed if it were assigned Special Operations Force responsibility?

Answer. Yes.

INITIATIVE 17

Question. On May 22, 1984, the Chiefs of Staff of the Army and Air Force agreed to a series of proposals to coordinate Army and Air Force programs. Included in this agreement was what is called Initiative 17 for the Air Force to "transfer the responsibility for providing rotary wing lift support for Special Operations Forces to the Army". This proposal has generated a great deal of concern. For example, the Deputy Secretary of Defense has twice withheld authority for full implementation. The Committee has been told that last week the Deputy Secretary again addressed this issue. What, if anything, did he decide?

Answer. The decision calls for the eventual transfer of the long range rotary-wing mission from the Air Force to the Army. We plan to continue upgrading ———.

Question. As currently structured, does Initiative 17 insure that there will be no adverse near-term impact on Special Operation Forces lift support?

Answer. For the short term, we have decided to leave the mission with the Air Force and go with the ———.

Question. Does the Army have a viable alternative in the near-term to the Air Force's HH-53 PAVE LOW helicopter?

Answer. The Army's near-term alternative to the HH-53E PAVE LOW is the MH-47E. The MH-47E will have a fully integrated cockpit and other enhancements to meet special operations forces needs to operate safely over extended ranges, at tactical altitudes, over unfamiliar mountainous terrain, through the weather at night. The ———.

Question. It is the Committee's understanding that the Army's proposal is a "paper airplane" described as the MH-47E. When would the Army have full operational capability to support Special Operations Forces (SOF) with this aircraft?

Answer. The Army will achieve a first unit equipped MH-47E operational capability in Fiscal Year ———. Though the SOF configured MH-47E has not yet been developed, the basic airframe, the CH-47D, is a proven aircraft. The CH-47D today is the most extensively used cargo helicopter in the free world for SOF or conventional use. However, the CH-47D represents an under-the-weather capability when operated at tactical altitudes. The MH-47E is an upgraded CH-47D that capitalizes principally on already developed and proven modifications that will result in the safest, most operationally effective medium to heavy lift helicopter in existence for SOF applications conducted in-the-weather.

Question. It is our understanding that the option selected by Mr. Taft which transfers the rotary lift mission to the Army will cost ———?

Answer. It is true that the transfer of the rotary wing mission to the Army ———.

Question. The MH-47E would be the most sophisticated aircraft in the Army inventory. Where would the Army propose to draw the maintenance support required for such sophisticated aircraft and avionics?

Answer. The Army has included in its program a complete training and support program. It should be noted that the Army already has an extensive aviation maintenance program in place for over 450 CH-47s and a wide variety of other fielded aircraft, whch include sophisticated avionics, radar, forward looking infrared, aircraft survivability equipment, integrated cockpits, etc. However, we do not underestimate the task and have planned for contractor augmentation for the first two years of operation of the MH-47E.

Question. Since the CH-47 helicopter has been known to exhibit an undulating flight characteristic even in stable air, would this have an effect on its ability to aerial refuel?

Answer. The CH-47D is not an unstable aerial platform, and in fact in August 1985 demonstrated that it was more stable and easier to air-to-air refuel than the CH-53, a shared finding of involved test pilots. Test results have been reviewed and concurred with by the Director, Department of Defense (Test and Evaluation).

Question. Since the Marine's use CH-53E's, the Air Force HH-53 PAVE LOW helicopter can be clandestinely deployed on board U.S. Navy aircraft carriers. Can the CH-47 be employed clandestinely on a carrier?

Answer. A degree of operational security is provided the MH-47E by its look-alike configuration to the Marine CH-46. It is also provided a degree of protection by world-wide use of the Chinook in 14 other countries as a commercial or military aircraft.

Question. How would the acoustic, infrared and radar signature of the MH-47E compare with that of the HH-53 PAVE LOW III?

Answer. To our knowledge, no comparative analysis has been conducted. However, the CH-53 and the CH-47 were designed to perform the same missions. It is therefore reasonable to assume that their signatures are very similar. The MH-47E, however, will be outfitted with a more extensive aircraft survivability suite to include infrared jammers and radar warning receivers.

Question. The Department of Defense Inspector General performed an audit of the Army CH-47 modernization program and expressed some concerns. Does the Army proposal to enhance the CH-47 into the MH-47E significantly understate the cost as the Inspector General alleges?

Answer. No. There has been no Department of Defense Inspector General audit of the MH-47E. However, as a part of the Inspector General review of the CH-47D program, there were some initial opinions expressed concerning future applications for the CH-47D. Since then, we jointly reviewed preliminary plans for the MH-47E. The Inspector General has since concluded that there are no unresolvable issues, that the Army has solid rationale for its MH-47E program and that all areas are being resolved in the Planning, Programming and Budgeting System (PPBS).

Question. Does the Army proposal exclude characteristics which may be essential to special mission performance including rotor brake, deicing equipment, and folding rotor blades?

Answer. The Army proposal includes all essential equipment for special operations missions. Operational experience aboard ship in high winds has proven the rotor brake unnecessary; the CH-47D composite rotor system naturally sheds ice in up to moderate icing conditions which negates a requirement for special deicing equipment; and blade automatic folding on the CH-47D is not practical or necessary. Blades can be manually folded/removed if required.

Question. Would the proposed use of new, more powerful engines create additional safety problems and further understate the Army's cost to pick up this mission?

Answer. No. The enhanced engine for the MH-47E is a low risk project that creates no additional safety problems. In fact, it enhances safety by providing out-of-ground-effect hover capabilities at greater gross weights, which will better accommodate special operations mission profiles.

Question. Initiative 17 began as a response to the dual procurement of similar H-60 helicopters for different missions. Is one of the consequences now that the Army and Air Force intend to develop and procure vastly different helicopters, the HH-53 and the MH-47, for the same mission?

Answer. No. The Army selected the MH-47E for cargo helicopter special operations applications due to an extensive common logistics and training base established for its 436 aircraft CH-47D fleet. Additionally, the MH-47E and the MH-60X will be designed to maximize commonality of equipment for both aircraft. The MH-47E is being designed specifically for special operations conducted at tactical altitudes, over unfamiliar mountainous terrain, in the weather at night, for extended ranges. The fully integrated cockpit will allow operations to be more safely conducted by two pilots (a reduction of one crewmember from the HH-53). The fielding of the MH-47E will then allow HH-53s to be freed up for other vital mission requirements such as combat search and rescue.

Current plans call for the modification of an additional 10 combat rescue HH-53s to Pave Low MH-53 configuration by FY 88. The resulting total of 19 Pave Lows is intended to meet only the immediate contingency SOF requirements. The SOF Aviation Plan, which OSD certified and sent to Congress in early April, proposes modification of sufficient Army MH-60Xs and MH-47Es by FY 91 to meet wartime and contingency SOF rotary wing requirements. This would free the Pave Low MH-53s for other Service/Joint missions as directed.

Question. The current Chairman of the Joint Chiefs of Staff, in his previous position as Commander-in-Chief of Pacific Forces, commented on the Intitiative 17 proposal in a lengthy message dated November 9, 1984. Admiral Crowe stated that "potential loss of dedicated systems with sophisticated avionics for night, adverse weather penetration, and in-flight refueling degrades capabilities . . . to support contingency or war time operations. What action has been taken to address these concerns?

Answer. To meet immediate requirements the Air Force has modified two HH-53 helicopters to a PAVE LOW configuration to replace two aircraft lost to accidents. Ten additional MH-53J are being modified and will be delievered in the 1987-88 time frame. The Army is developing both the MH-60X and MH-47E to provide light and medium lift vertical lift support for SOF. These helicopters will be delivered between 1989 and 1991. The Army will not assume the medium lift mission from the Air Force until the MH-47E has proven itself capable and crews are trained to fly the SOF mission.

Question. Has Admiral Crowe in his current position as Chairman of the Joint Chiefs of Staff taken a position on Initiative 17?

Answer. Admiral Crowe in his capacity as Chairman of the Joint Chiefs of Staff has not taken an official position with regard to Initiative 17.

SOF AS NATIONAL ASSET

Question. In allocating limited resources against the entire range of our military priorities, it seems that 2 areas should be considered for full funding. The first is our strategic nuclear forces. While the probability of our having to use nuclear force is quite low, the enormous consequence and risk involved dictates a high funding priority. The second area that should, perhaps, be given a high priorty is special operations forces—not because the risk is so high, but rather because the probability of their being used is nearly 100%. Why have SOF funding requirements not fared better in the Pentagon?

Answer. I believe SOF funding has fared well in the Pentagon. In 1981, SOF funding totaled ———. The FY88 FYDP is under development. We must now ensure that DEPSECDEF's SOF initiatives are supported in the new FYDP.

There is a great deal of competition among the programs within the Department but looking at the record objectively, it seems that our SOF revitalization effort is healthy and that SOF funding is faring well.

Question. What would it take for SOF to be considered a "national" program and receive the same policy attention provided for the B-1, SDI, etc.?

Answer. Over the past five years SOF have received a great deal of policy attention as a matter of national priority, and that priority has been translated into the reality of the SOF revitalization program.

The President designates "national" military programs based on the advice and recommendations of the Department of Defense.

Question. According to the S&I report, one of the most successful special operations forces is the British Special Air Service (SAS). The SAS is considered a British national asset, appropriately funded, under a centralized command reporting directly to the highest British governmental level. Is there anything we can learn from the British since they have historically maintained superb special forces units that have acquitted themselves well time after time?

Answer. U.S. SOF have maintained a close working relationship with our British counterparts for a number of years, including combined training and informational exchanges with the SAS and other units. These quid pro quo interfaces have proved very beneficial for both nations and will continue into the foreseeable future. Specific U.S. SOF having frequent contact with our British counterparts include U.S. Army Special Forces, U.S. Navy SEALs, USAF Special Operations units, ———.

Question. Does it make sense for the United States to have a small elite special operations force reporting directly to the Secretary of Defense or perhaps even directly to the President?

Answer. ———.

Question. Although SAS forces are commanded from the highest level, after being tasked with a military mission, the force commander has substantial authority to carry out his tasking. Is the impression correct that we tend to hamstring our commanders by controlling operations during execution from here in Washington?

Answer. No, the theater commanders are charged with the responsibility and authority for the conduct of military operations within respective areas of responsibility once approved for execution by the NCA. This "operational command authority" provides the commander with the control necessary to accomplish his mission and thereby discharge his responsibility. The JCS are responsible for providing direction of operations and for serving as a channel of communication between the commanders and the Secretary of Defense; the JCS has no command authority over the CINCs, or anyone else.

SPECIAL OPERATION FORCES EDUCATION AND TRAINING

Question. Full integration of Special Operation Forces into the Defense system is inhibited by what many believe to be, the lack of understanding of its capabilities and limitations. This may be due, in part, to the limited Special Operations instructions in the Service schools.

Why do military officers currently receive less than 15 hours of instruction at senior service schools when allied countries typically give more than 100 hours in similar military schools?

Answer. The course of instruction at our Service schools, as a matter of necessity, must be developed within the constraint of a finite number of hours available for instruction. As a result, any decision to increase the time devoted to a given topic also involves a conscious decision to de-emphasize another topic.

At the same time, the course of instruction generally reflects DOD priorities and evolves as priorities change. During the 1970s, Special Operations Forces (SOF) were being de-emphasized and, therefore, there was little, if any, coverage in our Service schools.

As you know, SOF are now among our highest priorities and Service school curricula are evolving to reflect that priority. We have already seen increased attention to SOF and we believe recent initiatives will complete the process of institutionalizing that coverage.

Question. As a part of the fiscal year 1986 appropriations process, the Congress directed that a report be provided detailing the steps being taken to strengthen the Special Operations training at the appropriate schools. In the report dated March 31, 1986, it is stated that "a great deal more must be done". When do you think you will actually implement significant improvements in the DOD education and training program with regard to Special Operations Forces and doctrine?

Answer. We expect a substantial increase in the attention devoted to SOF in our Service schools beginning with the 1986–87 academic year. We have recently accelerated the evolution of this coverage by requesting that each institution review its curriculum and outline steps to expand and enhance SOF coverage. Deputy Secretary Taft has also asked the Chairman of the Joint Chiefs of Staff to establish a task force to facilitate development of materials that meet the varying curricular needs of the education and training institutions.

JOINT TRAINING EXERCISES

Question. During the course of the S&I study of Special Operations Forces (SOF), many reservations were raised concerning joint training exercises, specifically:

Not all Services participate in joint SOF exercises.

Joint SOF exercises are not conducted in conjunction with conventional force exercises and vice versa.

Directed exercises do not utilize full capabilities of SOF equipment.

Joint exercises do not realistically test theater Operational Plans requirements.

The S&I staff reports that a central finding of an Army Doctrine panel that reviewed joint doctrine was, "there is no joint SOF doctrine." How can you train jointly to accomplish what should be joint missions if you have no joint doctrine?

Answer. I don't fully agree that there is no joint SOF doctrine. Joint SOF doctrine currently exists in JCS publications and is further amplified in unified command publications and within Service doctrinal manuals. As national policy, strategy, and tactics change, our SOF doctrine changes. We are currently working on updating SOF doctrine.

Question. What are your plans to fully integrate SOF and conventional units into concurrent and complimentary exercises?

Answer. Full integration of all warfighting capabilities is a continuing concern of the JCS and the respective field commanders. The military exercise program developed by the theater CINCs and the JCS seeks to exercise our forces under varying relationships to enhance interoperability. SOF do participate in numerous exercises as an integral part of large conventional forces. However, there is always room for improvement and we are striving to further enhance SOF/conventional interoperability.

Question. Do all Services participate fully in joint SOF exercises?

Answer. Individual Service exercise participation is keyed to the exercise objectives and the roles and missions of the individual forces involved. Accordingly, there are exercises where multi-Service SOF (USA, USN, USAF) participate, as in USEUCOM's FLINTLOCK and LANTCOM's SOLID SHIELD/OCEAN VENTURE; while other exercises focus on the specific capabilities of a single Service, as in USSOUTHCOM's KINGS GUARD series (USN SEALs) and USPACOM's COBRA GOLD (USA SF).

Question. Why did the Navy decline to participate in FOAL EAGLE, a SOF exercise conducted in Korea?

Answer. Navy participates in every FOAL EAGLE exercise. In 1985, Naval Special Warfare Group ONE provided staff and forces to the Combined Naval Special Warfare Task Group, headquartered in Chinhae, Korea, and to the Combined Naval Special Warfare Task Unit, headquartered in Mok Po, Korea. They also provided staff augmentation to the Combined Unconventional Warfare Task Force.

Question. What actions will be instituted to ensure full SOF equipment and unit capabilities are tested to actual OPLAN actions during joint training exercises?

Answer. One of the chartered tasks of the Joint Special Operations Agency is to "participate in planning, coordination, direction, and evaluation of special operations training exercises within the purview of the Joint Chiefs of Staff." An initiative taken in December 1985 by the Director, Joint Staff, requested the unified commanders to review the existing exercise programs with a view towards ———. JSOA officers, by their continuous participation in the planning, coordination, conduct, and evaluation of numerous joint SOF exercises, will continue to seek greater parallels in exercise objectives and OPLAN requirements.

Question. Air Force Reserve AC-130 gunships are tasked predominantly for SOF night operations. Why, then, during a recent exercise in the Caribbean called UNIVERSAL TREK, were these gunships tasked to support only conventional forces during only daylight hours?

Answer. The AC-130 gunship is a highly precise weapons platform that can operate either day or night in support of ground forces (either conventional or special operations). The critical determining factor that impinges on employment is the threat level air defense capability that could interdict or engage the aircraft during its mission. During the exercise UNIVERSAL TREK, the SOF teams were operating in their foreign internal defense role and did not require suppressive support from the AC-130s.

Question. Is the S&I report correct when it states that "this is not the only reported instance that Air Force SOF participated in a joint exercise that did not include night operations which is their primary mission profile?"

Answer. Such generalizations do not accurately portray the objective of the aircraft's use in joint exercises. As a significantly effective aerial fire support platform, the AC-130 must be interoperable with ground forces, SOF and conventional, in both day and night operations, where a low level air defense threat permits its employment. Tactics remain basically the same for the gunship and its crew regardless of the time of day.

Actual military operations, e.g., URGENT FURY (Grenada), have demonstrated that conventional ground forces must be familiar with the aircraft capabilities and methods of employment.

Use of the aircraft is determined by the overall tactical objective and opposing threat air defense capability. The operational ground plan, fire control measures, and training area limitations are other key planning factors. Environmental factors, as well as equipment malfunctions, may also impinge on usage during exercises.

Assuredly, there have been joint exercises where night operations were not conducted. The key point, however, would be that exercise objectives dictated such use.

INTELLIGENCE SUPPORT FOR SPECIAL OPERATION FORCES

Question. The Committee's investigative report states that there is a consensus that "appropriate and meaningful intelligence data is available, but it is not timely", to support Special Operation Forces.

If the intelligence information needed is available, why is it not provided to the Special Operations Forces in a timely manner?

Answer. Special Operations Forces, particularly those engaged in, or planning for "real world" operational activities, receive ———.

Question. The only area of intelligence information that virtually all Special Operations Forces units and commanders felt was consistantly not available to them for planning or actual operations was human intelligence. Is there no direct link with the CIA or DIA which would provide Special Operations Forces with the necessary human intelligence on a timely basis?

Answer. ———.

Question. One theater commander-in-chief told the Committee's investigative staff that a Unified Special Operations Force Headquarters could provide better intelligence support from the CIA and other intelligence agencies. Do you agree with this conclusion?

Answer. From the perspective of the intelligence producer, it is immaterial whether the element being supported is a unified headquarters, or has some other type of organizational structure. ———.

TARGET FOLDERS

Question. Targeting is a theater responsibility, to be accomplished by the theaters' component Services. Target folders are required to be produced by Service components in the theaters for each target selected as a potential special operations mission. ———?

Answer. In September 1985, JSOA initiated a programmed series of Special Operations Intelligence Conferences. ———.

Question. What personnel, equipment or intelligence support is lacking and is required to redress the backlog?

Answer. The backlog of Target Folders primarily resulted from manpower shortfalls and lack of intelligence agencies and command specifically tasked to support SOF. Significant progress has been made in both areas. For example, manning for the Naval Special Warfare Division of Fleet Intelligence Center Pacific, which satisfies intelligence taskings for both Fleet (PACFLT) and Joint (SOCPAC) Commanders, recently increased from one officer to two officers and six enlisted, and is programmed to grow to 15 people by FY 1990. Similarly, starting in October 1986 Army Intelligence Agency will assume Target Folder production responsibilities for the Army SOF component of USCINCLANT. It is believed tht the manpower growths currently programmed for SOF intelligence support coupled with identification of production agencies to support SOF will resolve the backlog of Target Folders.

Question. What actions have been taken to establish some commonality in the Target Folders to assist in operational tasking of SOF units between theaters and intelligence collection.

Answer. The JSOA-hosted intelliegnce conferences have gone a long way in standardizing Target Folder production. ———.

The work of the conferences will culminate with publication of SOF intelligence and targeting procedures. In the interim, information has been distributed to all CINCs, primary commands, and concerned intelligence agencies/commands to serve as the standardization baseline for SOF Target Folder production.

Question. What is the current status, by theater command, of Target Folders sufficiently completed to support operational missions?

Answer. The number of completed SOF Target Folders by CINC is: ———.

Question. Have all Target Folders been staffed with all supporting components, i.e., Air Force for the requisite airlift?

Answer. This was a deficiency in the nonstandardized Target Folder production process. These Target Folders are being forwarded for review by supporting components. ———.

SPECIAL OPERATIONS COMMANDS

Question. Currently the theater Special Operations Commands (SOCs) are only planning staffs and are to realize full-time manning levels upon mobilization. Except for the European Command there are no deployable communications for tactical operations, and the rapid expansion of the SOCs may be hampered as many mobilization positions are not identified with a specific individual. The theater SOCs are to expand from their current manning levels upon mobilization, though for many of the commands less than half of those spaces have personnel identified. How many of the SOC mobilization spaces have personnel identified?

Answer. Of the 491 SOC mobilization spaces to be filled by reservists, 126 personnel have been identified by name.

Question. What are the DoD's plans to identify personnel to remaining spaces?

Answer. Currently, JSOA is coordinating with the Special Operations Commands to determine how many of their mobilization spaces have personnel identified and what action needs to be taken to resolve this issue. Identifying personnel to fill mobilization spaces is primarily a function of the unified commander in coordination with the Services. The Joint Chiefs of Staff will emphasize this requirement in the Mobilization Annex to the Joint Strategic Capabilities Plan for FY 1987-1988 when it is published.

Question. Due to the high cost of active personnel spaces and other limitations such as the European Troops Strength ceiling, what is the feasibility of using Reservists to a larger degree in the Special Operations Commands?

Answer. Although feasible, there are problems that must be resolved. Of primary concern is identifying reservists that are mission essential (i.e., within the 100,000 callup). Because of the limited number of reservists called up, CINC priorities have heretofore not included SOC augmentees. To have the reservists arrive after mobilization would too late to support the bulk of the special operations staff requirements.

Question. Would this better integrate the Reserves into the theaters?

Answer. Yes.

Question. Only the European Command's Special Operations Command has any deployable communications to support tactical operations. What are the DoD's plans to resource deployable communications for the Special Operations Commands?

Answer. On 2 December 1985, the Joint Chiefs of Staff approved a Multi-Command Required Operational Capability for Improved Communications Capability for Unconventional Warfare/Special Operations Forces (UW/SOF) ———. The Joint Chiefs of Staff also approved the restructuring of the Joint Communications Support Element, which will provide ——— to include the Special Operations Command Headquarters. Further, the Army is activating the 112th Signal Battalion (Special Operations) in ——— and Service SOF C3 support in theaters where designated as responsible by DoD Directive 5100.3 (Support of the Headquarters of Unified, Specified, and Subordinate Joint Commands).

Question. Many DoD officials indicated to the S&I staff that the Southern Command, which has operational command over Central and South America, is the region having the greatest potential requirement for using Special Operations Forces. Why, then, is the Southern Command the only theater CINC who does not have a subordinate Special Operations Command?

Answer. An earlier CINC concluded a SOC designation was not necessary. The current CINC hs initiated action to establish a SOC.

JOINT COMMUNICATIONS UNIT

Question. ———. In the opinion of some Army communications officers, the same equipment that ——— would satisfy other SOF communications requirements, and as it is available now, could be procured at less cost. What analysis has been conducted to determine the feasibility of using selected items developed ——— to satisfy current SOF communication needs?

Answer. Information on the ——— is shared extensively throughout the Joint SOF community through the Special Operations Special Technology Program, the Joint Special Operations Forces C3 Interoperability Program, and various SOF C3 conferences. The ability of SOF to capitalize on identified off-the-shelf products to satisfy communications needs is inhibited by very stringent Sole Source Procurement regulations.

Question. What is the oversight procedure to ensure that research and development efforts by the Services and different agencies and commands are available to the community as a whole?

Answer. The Joint Special Operations Agency (JSOA) maintains cognizance of SOF-related research and development (R&D) programs. In addition to participating in inter-service R&D forums, JSOA maintains representation on several interagency working groups. SOF R&D information is provided by JSOA's Research, Development and Acquisition Division to the Services, agencies and command through direct coordination and representative forums, such as the Special Operations Special Technology Program and the Joint SOF C3 Interoperability Program.

JOINT SPECIAL OPERATIONS AGENCY (JSOA)

Question. The Joint Special Operations Agency (JSOA) was established January 1st, 1984 to advise the Joint Chiefs of Staff in all matters of special operations. The investigative report concludes that JSOA's current charter does not provide sufficient control over the Services to redress the current special operations shortcomings. Does JSOA have command authority over Special Operation Forces?

Answer. No.

Question. Does JSOA have any direct control over Special Operation Forces?

Answer. No.

Question. Does JSOA have functional responsibility or control over the Services' planning, programming and budgeting for Special Operations Forces?

Answer. JSOA evaluates and makes recommendations on the total Special Operations Forces program and provides advice on special operations resource issues to the Chairman, JCS, in his role as a member of the Defense Resources Board.

PLASTERWORK

Question. A classified program called PLASTERWORK is reportedly a ———.

Answer. ———.

Question. What is the FYDP quantity and funding profile by appropriation?

Answer. The following funding profile (OPA2) has been established to support the PLASTERWORK program. ———.

Question. Please provide a short description of PLASTERWORK, show the original milestones and compare those to what the current milestones are projected to be.

Answer. The PLASTERWORK program is ———.

ARMY READINESS

Question. Although ——— we do not know how many of these units are indeed marginally ready as opposed to substantially or fully ready. What do you estimate the current breakdown of your readiness ratings to be for you special operations and associated forces?

Answer. The ratings as of March 1986 show ———.

Question. Despite the significant improvement made recently by the Army, the Investigative Staff indicates that "serious deficiences remain." For example: there is a lack of nonstandard U.S. weaponry for training. ———?

Answer. The readiness ratings have increased as a result of a deliberate effort to fill all mission essential equipment requirements in every active SOF unit. ———.

Question. What is in the fiscal year 1987 budget request to specifically correct the deficiencies noted in the Investigative report?

Answer. The fiscal year 1987 budget request specifically provides communications equipment, language training, special operations aviation helicopters and psychological operations leaflet rolling machines and mobil transmitters.

Question. ———?

Answer. ———.

Question. ———?

Answer. ——— during numerous joint exercises Army SOF do train with Air Force SOF.

OFF-THE-SHELF-PROCUREMENT

Question. During the course of the Investigation Staff's study of Special Operations Forces, many Army personnel cited examples of commercial, off-the-shelf, non-developmental items that could be procured that were sufficient to meet operational requirements. These items could negate the lengthy research and development process which can take as long as 7 years, actually be cheaper, and would fulfill shortages that currently the Army procurement systems cannot meet. Has the Army conducted a full survey to identify what shortages can be filled by the procurement of non-developmental items or other suitable items? If such a survey, or partial survey, has been conducted, what would be the cost savings and what readiness improvements would be realized if such procurement was approved?

Answer. The marketplace is examined on an item by item basis; however, no survey has been conducted in which the spectrum of SOF applicable items has been examined to determine possible suitability for Army SOF units. The Army is well aware of the benefits manifest in the acquisition of suitable non-developmental items, and this approach is used whenever possible.

Question. What, is any, legislative authority is required to permit Special Operations Forces to procure off-the-shelf commercial items on a selective basis?

Answer. Congressional legislation establishing a $5 million threshold below which SOF equipment could be procured using special management procedures, quick reaction capability, and/or reduced approval authorities including program/project directed sole source, where appropriate, might be a means of speeding the acquisition of non-developmental items for Special Operations Forces.

Question. Special Forces units tested a Para-Plane Parachute for a number of years, after which the Army's Airborne Board tested it for another 3 years. The same parachute has been used by civilians and other military forces for at least 10 years. Why does it take so long to complete testing on a parachute?

Answer. The requirement for a ram air parachute was approved in August 1983. The developmental program for this is scheduled to culminate in an initial operational capability in 1989. A good portion of this time is for testing candidate parachutes to ensure they meet a reliability standard of .9995 with 90% confidence, which is to say we must conduct extensive testing to ensure reliability. The Army must ensure that any item of equipment will meet the unique requirements of the service. Civilians do no jump while loaded down with weapons and equipment as soldiers do. The Army would be negligent if it rushed any given parachute off the shelf and into the hands of soldiers without first testing it to ensure it could meet requirements and do so safely.

Question. Does the DoD procurement system not take into account that an item is not developmental in nature and is already used by the civilian as well as foreign military forces? Has the Army yet approved this particular para-plane parachute for purchases?

Answer. The procurement system does take into account the fact that an item is not developmental in nature. In order to provide an interim capability for this SOF parachute requirement, a non-developmental item approach was taken. Five candidate systems were acquired for consideration. Following an engineering evaluation, all five candidate systems were released for testing. Testing was conducted between August and December 1984 by the U.S. Army Airborne and Special Operations Test Board. The Board recommended an interim candidate in February 1985, after which the contracting process for a non-developmental item acquisition was begun. Four contracts were awarded in September, 1985 for the four major components of the interim ram air parachute system, which are the parachute, oxygen system, altimeter, and automatic opening device. The delivery period is January through September 1986. The Army is continuing to evaluate ram air parachute candidates and data for the objective system, with engineering development scheduled to be completed in 1987, at which time the interim system may prove to be the objective system.

Question. ———?

Answer. ———.

Question. Members of ———. Much of this weight could be reduced by lightweight equipment, clothing, rucksacks, and battery charging equipment. According to the S&I report, "as none of this is available through military procurement, many soldiers actually purchase items from commercial houses such as Eddie Bauer or Sears and Roebuck. Soldiers rate these items superior to issued equipment and are mission capable."

Are members of our special forces having to buy what they perceive to be needed equipment out of their own pockets?

Answer. The best possible, authorized mission essential equipment is provided to Special Operations Forces. If soldiers perceive that a civilian item is better suited, they must purchase it from their own resources. The Army discourages individual purchase of civilian equipment.

Question. Is the equipment being provided to our special forces inferior to what can be purchased at Sears, Eddie Bauer, or other commerical outlets?

Answer. The best equipment available is provided to Army Special Operations Forces. All authorized equipment must meet certain specifications to ensure that all safety considerations are met.

ARMY GUARD AND RESERVE FORCES

Question. According to the investigative staff report, when the Army instituted its initiative to correct equipment shortages for the active forces, the Reserve Components were not included. ———. What is being done to improve the readiness levels of the Guard and Reserve Special Operations Forces?

Answer. ———.

Question. In the active Army, new equipment can be controlled down to the receiving units in order to ensure that new equipment is not "siphoned-off" to other units. It is the Committee's understanding that because of the administrative manner in which new equipment is issued to Guard and Reserve units, those items may not be received by the intended units. How are you ensuring that the necessary equipment is reaching the intended Army units?

Answer. The units status report highlights any equipment shortage that inhibits unit readiness. Once highlighted, action is taken to fill units with authorized equipment.

Question. Regional Army commands and the National Guard Bureau have the authority to divert the equipment to different recipients. Are you withdrawing this authority with regard to distribution of Special Operations Forces equipment improvements to Guard and Reserve units to ensure that the equipment is not "siphoned-off"?

Answer. No. However, the various regional Army commands and National Action Guard headquarters have been incorporated into the SOF Readiness Action Group. The SOF RAG is responsible to ensure that improvements in SOF readiness are effected.

Question. ———. What action are you taking to improve the skill levels of these Guard and Reserve personnel?

Answer. Several actions are on-going. Fill of every available training seat is one action. Adequate airborne training opportunity is another. Approval for specific civilian acquired skills to meet Army qualification requirements is being considered.

Question. ———. Why is it that something as fundamental as cold weather equipment is not available to these units?

Answer. Each unit has currently authorized cold weather equipment similar to all other reserve forces targeted to respective areas. The reserve units do not have the newly approved, extended cold weather clothing system, a non-developmental item, that has recently been issued to active SOF. Actions are underway to determine funding to enable expeditious purchase for reserve SOF.

Question. The lack of availability of Special Operations schools also impacts the readiness of the Reserve forces. The Army Reserve requests schools through their respective Army headquarters three years in advance. The National Guard makes its request through the National Guard Bureau five years in advance. With personnel turnover and ever-changing requirements, how is it possible to accurately forecast training needs that far in advance?

Answer. The reserve component force structure has remained relatively constant for several years. The unit personnel turnover, despite being a slightly higher percentage than in active SOF, has remained constant as well. Given those relative constants, units can adequately forecast training requirements.

Question. Does this contribute to operational skill shortages throughout the Reserve components?

Answer. No, available training seats does not directly contribute to operational skill shortages. The level of utilization of training seats does.

Question. According to the investigative report, "One group had submitted 147 applications for schools and received only 14 school allocations. There were a number of instances where Reserve personnel received time off from their civilian employers only to find upon arrival at school that the course had been cancelled." Why is it so difficult for the active Army and Reserve components to cooperate a little more closely to ensure that these problems don't arise?

Answer. The Special Operations Forces Readiness Action Group consists of members from throughout the active and reserve components. Its principal mission is to ensure effective coordination to improve SOF readiness and to maintain it at a high level.

Question. One of the points brought out in the S&I report is that the tasking for Reserve units is sufficiently broad that it is difficult to make effective use of limited training time. As a comparison, British Special Air Service Reserve units are trained to perform specific reconnaissance missions. As a result, the British units are rated as qualified to perform their wartime mission even though they have only the same available training time as U.S. reservists. Do you believe that more specific mission tasking is possible with Army Guard and Reserve units?

Answer. Yes, the missions either have been, or are being specified in sufficient detail to ensure the most effective use of the limited training time available to the reserve components. As the unified commands refine their target lists, Arny will designate specific active and reserve units with responsibility for detailed mission planning folders.

Question. Would you anticipate that the readiness levels of Army Guard and Reserve units would improve if more specific mission tasking was provided?

Answer. Yes. All Reserve component Special Operations Forces units are expected to be ———.

Question. Most of the Reserve components visited by the Surveys and Investigative staff were above their 100% authorized personnel strength. Yet, even though some units were overstrength, ———. The average number of personnel trained and qualified in their special forces military occupational skill was ———.

What is the point in maintaining personnel above the stated requirements if you are able to deploy less than two-thirds of them with power training and skill qualification?

Answer. The units are authorized limited overstrength so that personnel undergoing skill qualification training will not count against available strength for readiness reports. There is also a higher turnover percentage among the reserve component than the active forces.

Question. Is this essentially a waste of money to maintain people on the rolls who are not capable of performing the mission for which they are supposedly being paid?

Answer. No, it is not because the lack of specific military skill qualification may not preclude the individual from being able to perform his/her mission, e.g., some unqualified Special Forces medics are qualified civilian emergency medical technicians. Skill qualification is a specific issue being acted upon by the Special Operations Forces Readiness Action Group. Acceptance of certain civilian acquired skills as qualification for military specialities is being considered.

Question. According to the investigative report, "There are ———. In some instances, repair parts are not available."

Each of the four Army Guard and Reserve special forces groups are authorized to have two AN/TSC-26 base station radios. Is it true that ———?

Answer. That is correct. Two of the more modern TSC-99 base stations have already been issued and the remainder will be issued by 1987. Each Special Forces Group, both active and reserve, will then have ——— modified to TSC-99 capability. ———.

Question. The investigative report indicates that "Due to maintenance problems the two radios issued have been inoperable for six of the last twelve months." How is it possible for the ———?

Answer. It is not possible. All Reserve component Special Forces units are programmed to be ———.

Question. Are active component base stations able to receive transmissions from radios and burst devices issued to the Guard and Reserve?

Answer. ———. The newer TSC-99 base station will receive burst transmissions from the newer OA-8990 burst device. ———. However, active units and reserve units are not required to cross-communicate. Normal command and control is exercised from a battalion to its deployed operational detachments.

Question. Reserve component groups are authorized to maintain and operate tactical satellite communications assets. How many have been issued to Reserve component groups?

Answer. Tactical satellite communications assets have been loaned on a mission essential basis to the reserve component groups. As documentation issues are resolved and more satellite communications assets become available.———.

Question. Some Reserve units' higher headquarters are not authorized access to that unit's Operational Plans.

How can these higher headquarters validate or approve personnel and equipment requests if they do not know what the requirement is?

Answer. Intermediate headquarters between Forces Command and the Army Reserve Special Operations Forces units are not specifically prohibited from having access to general war plans such as ———. The number of copies provided to Forces Command by the respective unified commander may preclude distribution to all intermediate headquarters.

Question. In one instance, the higher headquarters denied requests for arctic clothing because the headquarters had no access to the group's operational plan which has a mission requirement which includes ———. Is there a need to change the command and control of these units to fully integrate the Reserves into the Special Operations Forces structure?

Answer. The Reserve Component is fully integrated into the Special Operations Forces structure. Missions have been designated for each unit. The present command and control system may appear cumbersome, but it does not preclude reserve integration into SOF.

ARMY HELICOPTER MODIFICATIONS

Question. By FY 1990, the Army plans to modify ——— CH-47D helicopters with advanced avionics, air refueling capability, and other enhancements to support long range infiltration and exfiltration missions. This aircraft, to be termed the MH-47, has an estimated program cost of ———. Does this mean that the Army will spend ——— per helicopter for modificiation and end up with no additional helicopters than when you began spending, ———?

Answer. The Army intends to build the MH-47E out of an existing authorization of 436 CH-47D, which precludes procuring new airframes. Cost of the program for ——— is estimated to be no more than ——— million reported by the Department of Defense in its Special Operations Forces (SOF) Airlift Report. However, the Army is also closely looking at incorporating specified SOF modifications in its conventional fleet, which will result in significant cost avoidances in the future.

*Question.*The Army reportedly also plans to spend ——— million to modify seven existing UH-60A helicopters to the MH-60X configuration. What will you be doing to modify these seven helicopters since it appears that it will cost ——— per helicopter purely for modifications.

Answer. The Army program is to procure ——— MH-60X, which is in agreement with the Department of Defense Special Operations (SOF) Airlift Report, at a total estimated cost of ———. The Army is also closely looking at incorporating selected SOF modifications in its conventional fleet, which will result in significant cost avoidances in the future as the UH-60A is modernized to meet future requirements. Upgrades to the MH-60X include a fully integrated cockpit/mission management system, enhanced engine, uprated transmission, precision navigation equipment, forward looking infrared (FLIR), terrain following/terrain avoidance radar, upgraded secure communications, enhanced aircraft survivability equipment, air-to-air refueling capability, auxilliary fuel system, and other SOF equipment. Commonality with the MH-47E will be maximized to reduce logistics and training impacts. In addition flight simulators will be develop for both the MH-60X and the MH-47E to ensure highest readiness levels and saftey standards are achieved.

Question. For the record, please break out for each of the two helicopter types, by appropriations, the funding profiles and number of helicopters being modified in each fiscal year beginning in FY 1985 and continuing through the end of the five year defense plan.

Answer. Current estimate ($ millions) for Army Special Operations Forces (SOF) aircraft are: ———.

ARMY FORCE STRUCTURE

Question. According to the Committee's S&I report, not one special forces commander from unit level up to Army major command level, considered either Active or Reserve Army Special Operations Forces ———.

The majority of the joint commands echoed this conclusion. Do you agree with this finding?

Answer. In part. The present force structure is authorized at varying levels from ———.

Question. Active duty Army special forces battalions are ———?

Answer. Active Army Special Operations Forces will all be increased to the full wartime requirement by FY88. Increases have been continuous since 1984 and will be incremental until all units are at 100%. The incremental steps are required to meet recruitment, training and stability factors to ensure the highest possible readiness.

Question. Currently, military intelligence special operations companies are ——— of their requirements. The Committee understands that the Army is currently looking at raising this authorization level. How long do you estimate it will take to meet the required equipment levels and acceptable readiness standards for these units?

Answer. The active military intelligence companies are curently ———. Personnel ———.

ARMY COMMUNICATIONS

Question. Due to a current lack of equipment and personnel the S&I staff report that ———.

With the communications problems that have been repeatedly documented in our Special Forces capability and demonstrated in operation in Grenada, how is it the Army still has not assigned sufficient equipment and personnel to these units?

Answer. Each Army Special Forces signal company is organized at full wartime manning. The communications base station currently authorized is the TSC-26, two per company. ———.

Question. Army staff officers acknowledge that even with the acquisition of planned equipment, ———. Are there not sufficient numbers of these personnel in the Army as a whole or is it simply that the Army has decided to leave these ———?

Answer. The Table of Organization and Equipment has been designed to provide adequate personnel, currently 152, to man the signal company equipment. The signal company organization was established and verified by manpower and equipment review. Additionally, the personnel readiness rating for March 1986 was ———.

Question. The four active component Special Forces Groups are issued AN/TSC-26 base station radios which are technologically 35 years old and very difficult to maintain. Moreover, the system is so antiquated that there are no repair parts available for some of its components. In an effort to correct this problem, in 1978 the Army began development of the AN/TSC-99. Currently, the Army has purchased 30 of these new sets but they have yet to be issued and are stored at the Tobyhanna Army Depot because the Special Forces commands refuse to accept them. Why has the Army procured systems that are so inadequate in their ability to meet operational needs that the Special Forces commands have refused to even accept them over the alternative 35 year old systems?

Answer. The problems associated with the Special Forces refusing to accept the AN/TSC-99 have been corrected to an acceptable standard. In fact, the AN/TSC-99 has been issued to both the 11th Special Forces Group (USAR) and 20th Special Forces Group (ARNG) for their base station requirement in support of SOCEUR's FLINTLOCK Exercise. In addition, the 19th Special Forces Group (ARNG) is scheduled to receive the system in May 86. The remaining 27 AN/TSC-99 systems are scheduled for fielding during FY87.

Question. How deployable is this new system since it requires eight to ten C-130s simply to transport it?

Answer. Yes, it takes eight (8) to ten (10) C-130 to deploy the complete AN/TSC-99 system. Consideration is being given to forward deployment of the system.

Question. Assuming that the unit could be deployed to the European theater, how could it be transported on the grounds since many of its components are related "oversized" and cannot be transported over European roads?

Answer. The AN/TSC-99 system can be transported over European roads with appropriate permits and clearances.

Question. During operational testing, the system demonstrated a mean time between failure of 5.6 hours as opposed to the 1,200 hours specified. Has the Army determined what is causing such a problem?

Answer. The primary problem associated with the demonstrated mean-time between failure of 5.6 hours has been isolated to the software. This problem has been corrected and verified during a software test conducted at Tobyhanna Army Depot in December 1985.

Question. How much will it cost to fix this failure problem and will the government or the contractor have to pick up the tab?

Answer. The contractor has fixed the major software problems discovered during the July 1984 Follow on Evaluation (FOE) at no expense to the government.

Question. What is your best estimate of the mean time between failure that may be feasible given the track record of the AN/TSC-99?

Answer. The best estimate of the mean time between failure is between 500-700 hours. This will be validated during another FOE scheduled for July 1986.

Question. ———?

Answer. As the headquarters responsible for command of all Special Forces worldwide, Commander 1st SOCOM has the authority to task organize critical assets to accomplish his assigned missions. ———.

CH-47D HELICOPTER COST ESTIMATES

Question. On December 20, 1985, the Assistant Inspector General for auditing issued a report on the "understatement of cost of the Army's Spcial Operations Forces (SOF) aviation program budget data". The auditors concluded that the funding in the Army's budget would be understated by $36 million for upgrading the CH-47D helicopters. Has the Army included the $36 million in the program for the flight simulator that the auditors indicated had apparently been inadvertently excluded from the program?

Answer. Yes. A total of $83.5 million was placed in the Fiscal Year 1987 President's Budget/Five Year Defense Plan for flight simulators/training devices/military construction for MH-60X and MH-47E.

Question. According to the auditors, Army cost factors for upgrading the CH-47D helicopters have ranged ———. Why is the Army having such difficulty in better estimating the cost of such an expensive endeavor?

Answer. The referenced report does not qualify as an audit which is the official position of the Department of Defense Inspector General's Office. All questions surfaced have been answered to their satisfaction. However, the reason for varying cost ranges is that the Army investigated numerous stategies for acquiring special operations forces aircraft including different quantities to achieve the most cost effective acquisition strategy.

Question. According to the auditors, part of the difficulty in estimating cost is because of changes in the quantities to be procured, the changes in on-board equipment configuration, changes in desired aircraft capabilities, and changing procurement priorities from medium lift to utility helicopters. How can the Army commit itself to such an expensive program before resolving all of these issues which are apparently yet to be decided?

Answer. Initially, the Army investigated a series of alternative strategies that may have been pursued in the acquisition of Special Operations Forces (SOF) aircraft. Alternatives included different equipment configurations. The Army resolved its equipment configuration and elected to pursue a program that would first field the MH-47E. In an August 1985 Program Decision Memorandum, the Office of the Secretary of Defense reversed the MH-47E decision causing the Army to field the MH-60X, which has remained the acquisition strategy since that time.

Question. For the record, please provide a statement of the extent to which these issues have been resolved, and if so, how; also, please indicate what the Army believes the current cost factors to be for the upgrade program by fiscal year?

Answer. Issues have been resolved by formalizing equipment configurations in an Expedited Essential Required Operational Capability (EEROC). Current estimated costs for this program are: ———.

ARMY SOF SUSTAINMENT CAPABILITY

Question. Army Special Operations Forces deploy with a basic load of supplies for 15–30 days of operations. After that period Special Operations Forces sustainment stocks are either not available, insufficiently stocked, or are malpositioned. These operational limitations have been the subject of concern of not only unit commanders, but also the theater Commanders-In-Chief. What shortages, and concomitant operational impacts exist in SOF peculiar sustainment stocks, war reserves and operational project stocks?

Answer. Sustainment stocks generally connote war reserve (WR) stocks which includes operational project stocks (OP). However, both WR and OP requirements are separately computed, programmed, managed, and accounted for.

The SOF OPs percentage of fill are:

Command	OP designator	Auth (millions)	Percent fill
USAREUR	OAE-X-20-85-A	$53.4	38
EUCOM	OAE-S-26-85-A	20.7	98
EUCOM	OAE-S-29-80-A	1.2	81
USAREUR	OAE-S-31-84-A	.086	62
WESTCOM	WST-X-02-82-A	63.0	22
USSOUTHCOM	FOR-P-02-77-A	2.2	42

WR stocks have not been established specifically in support of SOF. WR stocks are oriented in support of a theater/command. While some SOF units are included in force data packaging for computing/determining WR requirement, there is no direct correlation with individual SOF units. Only OP stocks are directly tied to SOF units.

The type of item for which shortages currently exist are NBC protective mask, clothing, demolition, and first aid dressing to totally equip an indigenous fighting force for unconventional warfare.

The existing shortages in OP stocks have an operational impact only in the conduct of uncoventional warfare. They have limited impact on SOF units to perform strategic recon, direct action, or foreign internal defense mission. In regard to WR, the impact will be minimum, since they will be competing for theater reserve stocks along with other units to be deployed in respective theaters.

Question. What are the Army's plans to fill existing shortages and include additional prepositioning requirements in the Defense appropriation request?

Answer. Army's total requirement is being identified and programmed over the POM period. The Army is filling this requirement to the limit of available funds in accordance with a master priority list which includes SOF units.

A new operational project is being developed to support a ———.

Question. What plans does the Army have to consolidate prepositioned supplies and rectify any operational detriments caused by malpositioned sustainment stocks?

Answer. In the past year, the Army has moved CONUS based operational project stocks from CONUS to both Europe and Pacific Theaters. Current plans for positioning stocks are based upon CINC OPLANs which establish storage locations.

Question. What modernized items will be included in these sustainment stocks?

Answer. Those modernized items that are identified/selected by CINCs for operational project stocks will be included.

For war reserves, modernized items are automatically included in WR stocks/requirements through force modernization process.

Question. Are sustainment stocks programmed to meet reserve component requirements?

Answer. Sustainment stocks are computed, programmed and positioned for reserve components.

Operational project requirements are programmed to support reserve components (i.e., recently, Commo and Medical Equip was programmed in the current POM cycle to support the 11th and 20th Special Forces Groups in Europe).

War reserve requirements are not programmed against reserve components but rather against theater total allocated force, which includes Reserve Components.

Question. According to Army documents, there are no shortages of prepositioned stocks for the 10th Special Forces Group. However, according to personnel from the group, there are actually shortages in spares for key mission equipment such as radios, as well as shortages in other SOF unique material. How do you explain this difference?

Answer. Equipment on hand for the 10th Special Forces Group, which is in Preposition Materiel Configured to Units Sets (POMCUS) is at 90 percent fill for all units. The 10 percent shortfall exists in communication and communication support equipment (i.e., radios, generators, power supply and installation kits).

ARMY PERSONNEL MANAGEMENT

Question. In 1984, the Army established a special forces career branch for enlisted personnel. Why was a career branch not also set up for officers as is currently the case in the Navy?

Answer. Naval Special Operations officers receive training and use equipment which is markedly different from officers in other Navy disciplines. Army Special Operations (SO) officers require skills from many of the Army's basic branches, from which they are accessed into SO. As Special Operations Forces (SOF) became more specialized the decision was made to change SO from an Additional Skill to an Additional Specialty (ADSPEC). This change assured officers in SO could concentrate their efforts on becoming proficient in only their basic branch (e.g.: infantry, armor, military intelligence) and their additional specialty of SO, and assured SOF would be manned with officers with the required basic skills from all branches. It also provided SO officers greater visibility, enhancing their opportunities for promotion, schooling, and professional development. A need for further formalization of SO into a branch was not identified at that time but is now being considered again.

Question. Do you agree with the conclusion of the S&I investigation that "most special operations officers stated that they are pressured to get out of special operations after one assignment?

Answer. Do not disagree that the investigation found officers who felt pressured, however do not agree that officers should feel such pressure. Until 1983–1984 Special Operations (SO) officers were identified only with an Additonal Skill Identifer (ASI) and were required to maintain proficiency not only in SO but in their basic branch (e.g.; infantry, armor, military intelligence) and Additional Specialty (ADSPEC) (e.g.: Foreign Area Officer, Operations Officer, Procurement Officer) as well. They competed for promotion, schooling, and professional development assignments with officers who received consecutive assignments in their branch and/or ADSPEC. There was a perception that repetitive assignments to SO were not only not career enhancing but could be detrimental. Assignment officers in the Army Military Personnel Center (MILPERCEN) and senior officer mentors, acting in this perception, advised officers of the possibility that additional SO assignments could be detrimental since they precluded basic branch or ADSPEC experience. No pressure was exerted, officially or unofficially. Concurrent with the change of SO from an ASI to an ADSPEC, changes were made to promotion and school selection board composition to ensure senior SO officer representation. In addition the verbal instructions to selection boards were revised to include guidance on the importance of SO assignments. As a result promotions of SO officers to major, lieutenant colonel, and colonel have been at or above the Army average since 1984. Selection for Senior Service College by the latest selection board was substantially above the Army average for eligible SO officers. The perception that repetitive tours in SO are detrimental is now being replaced with the knowledge that SO assignments are career enhancing.

Question. Many special forces officers expressed the need for the established of a special branch to provide continuity and career management, representation on school and promotion boards and an increased emphasis on professional development education. Is the Army looking to pursue this possibility given the high priority placed in this area by both the Administration and the Congress?

Answer. Current personnel procedures have substantially improved management of and career opportunities for special operations (SO) officers. Given the high priority of SO the Army is continually examining ways in which to further improve its personnel management. The alternative of organizing SO as a branch of the Army is being considered. The Army's goal is always to assure officers in required disciplines, with necessary skills, are assigned to and developed in SO.

Question. Most Army units are required to give up personnel on base to perform post support and maintenance. However, special forces battalions are staffed with much more senior grades than an infantry battalion. Thus, for them post maintenance duties fall on E-6's and E-7's instead of E-2's and E-3's. Does it make sense to you to divert senior and highly trained E-6's and E-7's from their necessary training and mission responsibilities to support, what the S&I Investigators report, are such activities as lifeguards for the post swimming pool and coaches for the girl's basketball team?

Answer. The 1st Special Operations Command (1st SOCOM) is required to fulfill a fair percentage of normal post support details for Fort Bragg. Because of the high percentage of staff sergeants and sergeants first class within 1st SOCOM, some are tasked to perform these routine functions.

Question. Would you be surprised to learn that during the month of Jul 85 more than 193 special forces personnel at Ft Bragg were detailed to this type of post activities?

Answer. That is not a surprising figure for the 1st Special Operations Command committment to ensure the full operating capability of the Reserve Officers Training Corps Summer Camp. Special Forces personnel are considered among the finest trainers in the world.

LANGUAGE TRAINING

Question. ———. Does the present SOF linguist shortfall significantly impact on operational missions?

Answer. Not all of the operations that SOF perform require foreign language skills. For instance, direct action missions and strategic reconnaissance missions do not require foreign language abilities. Foreign language skills are more important in unconventional warfare and in foreign internal defense situations. Peacetime mobile training teams may or may not require foreign language skills, depending on the country concerned.

Question. How many language qualified SOF personnel does the Army require?

Answer. Within the active component, the Army requires approximately 1200 linguists. Within the reserve components, the Army requires approximately 2300 linguists.

Question. Many officials interviewed were of the opinion that some type of incentive, such as proficiency pay, may be needed to induce personnel to qualify and remain language proficient. What initiatives have been established to redress these shortages?

Answer. The Army took the lead within DOD to develop a legislative proposal to authorize linguist pay for both active and reserve component linguists who meet certain eligibility criteria. DOD has identified $9.66M for the Army in the FY 87 budget to start this program. Legislation has been drafted and is being coordinated with the other Services and DOD. Language pay will be established on a tiered basis; i.e., higher language proficiency will qualify for higher pay. The Army also plans to develop at least two scales, recognizing that it is easier to develop proficiency in Spanish than it is in Arabic. Qualification will be determined by annual recertification using the Defense Language Proficiency Test. This incentive specifically targets retention of the foreign language skill; and, therefore, is being widely supported within the Army as an inexpensive program which translates directly to increased personnel readiness.

Question. Some programs, such as local Army post language instruction, reportedly can train as many as 500 personnel a year. Yet, these local programs are prohibited from qualifying individuals at the same proficiency levels as the Defense Language Institute, Monterey, California. When there is such a shortage of linguists and you cannot meet the requirements through the school at Monterey, why have you published a directive that prohibits local posts from helping to meet the training requirement?

Answer. The Defense Language Institute (DLI) at Monterey, California, is chartered as the DOD training facility for initial language training. Normally, all military personnel requiring language training attend DLI. In the case of SOF, the Army conducted a survey which showed that approximately 60% of all active component SOF language requirements are resident at Fort Bragg, NC. 1st Special Operations Command (1st SOCOM) already runs a Command Language School at Fort Bragg to provide refresher/maintenance language instruction. Given the high density of language requirements at Fort Bragg and a well-established training facility there, the Army, with the full support of DLI, upgraded the charter of 1st SOCOM's Command Language School to teach to DLI standards in four high requirement languages until the end of FY 90. The combined capabilities of the Command Language School at Fort Bragg, which will be able to train up to 500 personnel over the four year period, and the Defense Language Institute will be sufficient to provide initial language training to SOF personnel.

Question. Will your planned programs be capable of meeting language needs?

Answer. Current and planned language programs have been designed to satisfy SOF language needs.

USE OF ARMY AVIATORS FOR ADMINISTRATIVE TASKS

Question. Army SOF commanders expressed concern that there is insufficient administrative support and planners at the headquarters level.

Are aviators ——— required to perform planning and support functions in addition to their flying requirements?

Answer. ——— has a primary and special staff responsible for planning and support functions. This basic planning staff will be augmented by experienced mission pilots (normally senior line pilots), who execute planning duties due to this experience. ———.

Question. Do you agree with one Commander who stated that an over burdened aviator equals accidents?

Answer. Yes. Numerous findings by accident investigation personnel support this view. A multiplicity of non-flying related duties that require excessive attention could have a debilitating effect on an aviators attention span.

Question. What actions are being taken to insure aviators are not over burdened and are permitted to spend their time honing their skills and not off doing paperwork somewhere?

Answer. Aviators like all other Army officers, perform extra duties in addition to combat mission training. The Commander allows mission crews to focus on proper crew rest, pre-mission planning, and pre-mission training without regard for other duties.

NAVY SPECIAL WARFARE EQUIPMENT

Question. According to the Committee's investigative report, Navy Special Warfare Personnel believe their forces are basically satisfactory in the areas of personnel and training. Equipment shortages are reportedly the primary reasons for any lack of readiness. The combat equipment on hand is approximately 75% of the required items.

Are the reports true that equipment must often be transferred from one Navy unit to another in order to meet mission taskings?

Answer. Some ———.

Question. Does the Navy have adequate secure high frequency radios and satellite communications equipment for special warfare personnel?

Answer. A procurement plan with necessary funding to fully meet ———.

Question. The committee's Investigative staff quotes Navy special warfare personnel as stating "that under present circumstances, it will be years before SEAL communication equipment will be fully interoperable with Navy and other Services" systems. The long lead time to procure new equipment means that instead of receiving state-of-the-art equipment, the new equipment is actually outdated." With the critical role that communications play in special warfare operations, what action is the Navy taking to rectify this problem?

Answer. ———. are being delivered to Special Warfare Groups. Manpack radios for Naval Special Warfare forces are purchased as additions to existing Army procurement contracts. Developmental projects, such as a small, very mobile forward based communications system will meet joint compatibility requirements established by the JCS.

Question. Forty-five percent of the potential Navy special warfare targets lie within areas bounded by frigid waters. What is the Navy doing to develop an active heat generating diver thermal protection suit?

Answer. Cold water is an environment special warfare forces must be able to operate in, not just survive. ———.

MARINE CORPS SOF CAPABILITY

Question. The U.S. Marine Corps does not classify any of its units as Special Operations Forces. Yet, in 1985, the U.S. Marine Corps has enhanced the capabilities of Marine units deployed with the Mediterranean Fleet to be Special Operations Force capable.

What will be the inherent special operations capability of the Marine units?

Answer. The Marine Corps possesses an inherent capability to conduct a broad spectrum of maritime oriented special operations in the area of intelligence gathering and direct action. The Marine Corps has initiated a program specifically focused on enhancing the special operations capability of our forward deployed Marine Amphibious Units (MAU) to conduct appropriate special operations missions. The goal of this program is to provide enhanced capability to all forward deploying MAU's and designate them Marine Amphibious Units (Special Operations Capable) or MAU(SOC).

These missions include the amphibious raid and the ability to conduct this complex operations on short notice, at night and at extended ranges. The capability to conduct the traditional noncombatant evacuation operations (NEO) is also being enhanced. ———. The MAU(SOC) retains its full capability to conduct conventional amphibious operations and remains a conventional fleet asset, not a dedicated Special Operations Force (SOF) unit trained exclusively for special operations.

Question. Can these Marine Amphibious Units forward deployed with the Mediterianean Fleet be used to reduce multiple tasking of SOF Units?

Answer. ———. The MAU(SOS) does not duplicate the special capabilities of SEAL's Special Forces, or Air Force Special Operations Forces.

Question. Does the Marine Corps intend to duplicate the capabilities of other Special Operations Force assets?

Answer. No, as stated previously, the Marine Corps does not duplicate the capability of any other SOF assets.

Question. In what situations do you foresee the Marine Corps using this capability instead of deploying more traditional SOF units?

Answer. Generally none. The Marine Corps MAU(SOS) units are forward deployed as Landing Force Sixth Fleet (LF6F) in the Mediterranean. Later MAU(SOS) units will be deployed to the Western Pacific. These units, by virtue of their forward deployed location, and ability to be located in position at sea in the vicinity of a potential objective, and respond on short notice to mission requirements within their capability.

Question. There are Marine Corps plans to upgrade H-53 helicopters to approximately 95 percent of the Air Force HH-53 Pave Low capability and to enhance some C-130's to approximately 85 percent of the Air Force Combat Talon capabilities. When the planned upgrades are made to Marine aircraft can they be used to reduce multiple taskings of Air Force SOF?

Answer. The basic assumption that the Marine Corps is planning to "upgrade H-53 helicopters to approximately 95 percent of the Air Force HH-53 Pave Low capability and to enhance some C-130's to approximately 85 percent of the Air Force Combat Talon capabilities" is incorrect. We plan to improve our H-53 series helicopter with Night Vision Goggles and NVG Compatible Cockpit Lighting, some DECM equipment, Global Positioning System (GPS), and a navigational FLIR on the H-53E. These modifications will better enable us to conduct our amphibious mission. These modifications will not make these aircraft adverse weather, low level penetrators for the infiltration/exfiltration mission as conducted by the Air

Force with the HH-53H Pave Low helicopter. It is not our intent to compete for this mission or to duplicate special purpose organizations such as the 1st Special Operations Wing. There are no plans to "enhance some C-130's to approximately 85 percent of the Air Force Combat Talon capabilities." We are reviewing the capability of our KC-130 to conduct our currently assigned tasks. The only funded modification program for the KC-130 is one to upgrade the aircraft with a current avionics suite as well as some minor airframe modifications.

Question. According to the S&I staff, the enhancements to the H-53 helicopters and the C-130 airplanes were planned without coordinating efforts between the Marine Corps and the Air Force. What is being done to coordinate procurements throughout the Department of Defense to prevent duplication of equipment?

Answer. Any modifications which may be implemented will incorporate Navy standard components designed for service in the maritime environment. Commonality with other services will be sought wherever possible.

Question. If no duplication of requirements is taking place, was any analysis performed to determine if joint procurement of similar equipment would result in reduced costs to the government?

Answer. It is the policy of the Marine Corps to seek commonality with the other services and joint procurement whenever possible. This will be followed in any aircraft modification program. Within the Marine Corps there has been no attempt to procure Special Operations unique aircraft or aircraft subsystems.

Question. Specifically, what joint actions have been affected to reduce aircraft costs of similar Air Force and Marine aircraft programs?

Answer. Marine Corps' H-53's and Air Force H-53's both undergo depot level maintenance and modification at the Naval Air Rework Facility, Pensacola, Florida. A joint program is now underway between the Naval Systems Command and the Air Force Logistics Command at Warner Robbins Air Force Base, Georgia to initiate in 1986 a common Air Force-Marine Corps-Navy depot level maintenance program for C-130's. This program will be managed by the Air Force.

NAVY SPECIAL WARFARE AIRCRAFT

Question. The helicopter support for Navy special warfare includes two reserve units that provide air support to both active duty and reserve SEAL units, designated as HAL-4 and HAL-5.

So these two units need to be updated with new avionics or even have their aircraft replaced with UH-60 helicopters or similar transport if they are to meet current Navy special warfare missions?

Answer. A formally stated Operational Requirement has been approved and will be the basis for industry proposals to meet the Navy's need for an improved Naval Special Warfare/Combat Search and Rescue capability. An initial operational capability of FY-89 is projected, and as such, updating the HALs with new avionics now is not considered cost effective.

Question. Are the current helicopters equipped with terrain navigation systems necessary for night operations in rugged terrain?

Answer. The HAL squadrons fly the HH-1K, VietNam era helicopters. They do have the AN/PVS-5 night vision goggles, and this provides a limited operational capability for night flying over rugged terrain. Installed navigation equipment is limited to TACAN and Automatic Direction Finding.

Question. The Navy is currently looking at using UH-60 helicopters or similar aircraft to meet short-range airlift needs.

(a) Is the Navy currently considering giving these assets, either rotary or fixed wing, to the reserves to support Navy special warfare:

(b) ———?

Answer. (a) Both Hal squadrons are in the Naval Reserve Force; that is, they have a small cadre of active duty Training and Administration of Reserves (TAR) officers and enlisted men, but the bulk of the force is comprised of Selected Reservists. The HAL squadrons will be combined with the one Helicopter Combat Support (HC) squadron to form two CSAR/NSW (HCS) squadrons in FY-89 when delivery of the new helicopter commences. Present plans are to maintain the HCS capability in the Naval Reserve Force.

(b) The active duty cadre of TAR officers and enlisted will provide the quick reaction aviation support needed from the HCS squadrons. ———.

DRY DECK SHELTERS (DDS)

Question. In FY 1985 the Secretary of the Navy terminated several construction contracts that had been negotiated with a contractor for various allegations of financial impropriety. One of the cancelled contracts involved the Dry Deck Shelter (DDS) program for Naval Special Warfare, though the DDS program was unrelated to any of these allegations. The DDS is attached to a submarine, that allows operations to and from the submarine by the SEAL Delivery Vehicle (SDV).

Why was the initial DDS construction contract cancelled?

Answer. A Navy Ad Hoc Gratuities Board found that there had been extensive gift-giving by General Dynamics officials between 1961 and 1977 to one government official. The Board stated that there was a clear intent to obtain as favorable treatment as possible for General Dynamics. In response to the findings of the Board, the Secretary of the Navy cancelled two contracts with General Dynamics; one of the contracts cancelled was the one with General Dynamics Electric Boat Division for construction of two DDS.

Question. Was any consideration given to the priority of the DDS and what effect cancellation would have on the program?

Answer. Yes, due consideration was given to the impact cancellation would have on the DDS program.

Question. Were Naval Special Warfare personnel consulted about the priority of the program prior to the decision to cancel the contract?

Answer. During the two weeks between the time the Secretary notified General Dynamics of his intent and the time when the contract was actually cancelled, Naval Special Warfare personnel provided estimates of the impact that would be caused by the cancellation.

Question. Did termination of the contract cause a delay in delivery?

Answer. ———.

Question. Was there an added cost of $9.4 million resulting from the decision to cancel the contract?

Answer. Present estimates are that an additional $7.0 million will be required to complete the cancelled DDS contract.

Question. What changes have been initiated to prevent such a recurrence?

Answer. The thrust of the contract cancellation was to alert industry that gift giving to obtain favorable treatment is not acceptable conduct. The Secretary's action is considered successful in this regard and of itself should prevent future recurrence.

SINGLE COMMAND FOR NAVAL SPECIAL WARFARE

Question. Naval Special Warfare is organizationally divided into Groups One and Two under the command of the Pacific and Atlantic Fleets, respectively. There is only a functional staff officer at the Navy Staff to coordinate Naval Special Warfare requirements.

Why isn't there a single command for all of Naval Special Warfare to develop doctrine, ensure uniformity in procurement, and represent a single naval command position with other Special Forces Operations commands?

Answer. Navy structure in general is oriented around the two major force claimants: Command-in-Chief U.S. Atlantic Fleet (CINCLANTFLT) and Command-in-Chief U.S. Pacific Fleet (CINCPACFLT). Operational tasking, programmatic funding, personnel assignments, and tactical employment are all the purview of the Fleet CINCs. Direct support to the assigned Fleet as well as area orientation, exercise participation, and dual tasking to the Unified CINCs is best accomplished through the present system of one Naval Special Warfare Group for each of the force claimant CINCs.

Question. Commanding officers for the two Groups independently address operational requirements, procurement, administrative issues, and theater Operational Plans, with guidance provided by a single staff officer for the Chief of Naval Operations. Could the absence of a single headquarters unit conceivably result in duplication of effort and expenditures?

Answer. Naval Special Warfare Group Commanders are intimately involved in operational planning for their forces. Often after liaison between the Groups to prevent duplication, they provide input to the Chief of Naval Operations, through their respective chains of command, to help establish force structure and equipment requirements. A Naval Special Warfare Center was established in November 1985, with an objective of developing tactics and doctrine. A study is nearing completion to expand the Naval Special Warfare sponsoring on the staff of the Chief of Naval Operations. Excellent communications among these echelons of Naval Special Warfare leadership prevent duplication of effort and expenditures.

NAVAL SUPPORT FACILITY IN ANTIGUA

Question. The Navy is enlarging and enhancing the Naval Support Facility in Antigua, West Indies, at a cost of $2.5 million to provide an underwater training area for Special Operations Forces (SOF). Naval SOF has plans to use these facilities well beyond the 1988 expiration date. However, reportedly no actions have been initiated to negotiate the lease beyond a 1 year renewal of the present lease.

Why doesn't the Navy renegotiate leases before added investments are made to a facility, especially if a lease will expire within a relatively short period of time?

Answer. The term of the lease is defined by the basic country to country agreement, which is the responsibility of the State Department. The Navy wants to extend the term of the lease and has expressed this to the State Department.

Question. What are the Navy construction plans for the naval facility on Antigua?

Answer. A transient barracks construction project has been initiated, funded, and approved. 35% design review is completed, and plans are to break ground in the first quarter FY-87.

Question. What are the Navy's operational requirements in Antigua?

Answer. ———.

Question. Can other U.S. facilities satisfy the planned requirements instead of Antiqua?

Answer. An extensive review of facilities that offered potential for a ———. While other facilities may be possible, the Naval Facility in Antigua is the best fit for these criteria.

NAVY PREPOSITIONING

Question. Naval Special Warfare personnel have selected sites for prepositioning ammunition in the Pacific and Atlantic theaters. While there are no prepositioned stocks in the Atlantic Theater, approximately ——— have been prepositioned in the Pacific Theater.

What are the Navy's plans to resource prepositioned ammunition shortages in the Atlantic and Pacific Theaters?

Answer. Approximately ——— and this amount is programmed to steadily improve over the FYDP; because the number of potential sites in the Atlantic is so large, ———. Some other equipment, such as boats, SDVs, weapons, radios, parachutes, etc., is prepositioned at forward operations and training sites. The bulk of NSW warfighting equipment and supplies will be transported forward on order, and ———.

Question. Where are the existing and planned prepositioned sites for the Atlantic and Pacific stocks?

Answer. ———.

Question. In selecting those sites what theater guidance was given, and what coordination with the other Services was effected in selecting those locations?

Answer. Guidance derives from the logistic support annexes in applicable war plans published by the Unified Commanders in

Chief. In developing these plans extensive coordination among the Services is conducted.

AIR FORCE READINESS

Question. Is it unusual to cancel an inspection right in the middle of it? Are the stories valid that claimed the Air Force cancelled the operational readiness inspection because the units could have failed?

Answer. It is unusual to cancel an inspection in the middle of it; however, this is not the case with the 1st Special Operations Wing (SOW) operational readiness inspection (ORI) conducted in Dec 85 and Jan 86. There were some weapon system reliability problems during the deployment; however, all aircraft completed enroute tasking and met deployment closure parameters. During the employment phase, the AC-130s encountered some problems with weapon system reliability. A time compliance technical order (TCTO) was issued for Air Force HH-53s after the inspection had begun and the aircraft deployed. The TCTO restricted HH-53 flight operations to visual flight rules only and flight over terrain which would guarantee a safe landing within five minutes from any point on the flight path. These restrictions did not affect the deployment phase adversely; however, they did preclude employment of the HH-53s in any scenario for which they could be expected to be tasked in wartime—the primary purpose of an ORI.

The stories that claimed the Air Force cancelled the ORI so the unit would not fail are not valid. The decision was made to complete the HH-53 portion of the inspection after the previously mentioned TCTO had been completed. There was not a new ORI, but the ORI was continued and completed on 6 January 1986. Some elements of the criteria required revision to provide a better evaluation of the 1st SOW's unique mission. The inspection continued, but application of the weighting criteria was delayed until the entire SOF ORI criteria were revised. Although the rating and grades in the major grading areas did not change significantly, the revisions put the emphasis where it belonged.

Question. The S&I report concluded that a shortage of spares contributed significantly to the Air Force special operations readiness problem. How can there have been a shortage of spares for these high priority units at a time when both DoD and the Congress have substantially increased the funding for spares when compared with the late 1970's?

Answer. Because of fiscal constraints, our budget requests do not always represent our total requirement. As a result, our spares shortages with the C-130 and helicopters have resulted in large part from prior year funding shortfalls. It's important to recognize that, as depicted below, strong spares funding is only a relatively recent phenomenon:

Fiscal year:	*Percent of rqmt funded*
1980	24
1981	53
1982	58
1983	51

	Percent of rqmt funded
1984	74
1985	100

Moreover, within these overall funding percentages, C-130/helicopters have been funded as follows:

[In percent]

Fiscal year	C-130	Helicopters (H-1, H-3, H-53, H-60)
1980	29	29
1981	33	25
1982	50	75
1983	40	65
1984	70	90
1985	100	100

With a two year average leadtime, the healthy funding in FY84 and FY85 will not produce parts on the shelf until FY86/87.

Nevertheless, future support is bright. Spares bought in FY84/85 are in the pipeline. Meanwhile, the Air Force has made SOF a top spares funding priority and the FY87 Presidents Budget funds all SOF requirements. We are committed to providing the logistical support necessary to support and sustain this important mission.

Question. War Reserve Spares Kits are given to deployable units so that sufficient spares and repair parts are on-hand to support wartime operations for a fixed period, generally 30 days. According to the S&I report, Air Force special operations units had War Reserve Spares Kits that are rated to meet nearly 100 percent of the stated requirement. Is that what Air Force Readiness reports show?

Answer. WRSK fill percentages can vary on a daily basis depending on the type of activity that a particular unit has in progress. The current fill percentages (15 Apr 86) for the units identified in the S&I report are: 1st SOS 82%, 7th SOS 95%, 8th SOS 95%, 16th SOS 96%, and 20th SOS 97%. These fill percentages are comparable to those in the S&I report.

Question. According to the S&I report, however, the requirements against which these kits are being measured does not include the specialized mission equipment included in these aircraft. Doesn't this mean that any shortages in the capability to repair some very critical mission equipment would be hidden in your reporting system?

Answer. The commander has the option in unit readiness reporting to subjectively assess all elements of support, including specialized/miscellaneous accounts (FX), which are adversely impacting mission capability. As such, the assets in these "FX" accounts are not hidden/exempt from the reporting system and would be identified by the commander if considered to be a major problem. Headquarters Military Airlift Command also receives weekly status reports from assigned units concerning pacing shortages in the specialized accounts. This helps ensure that all critical MC-130 equipment and spares are visible and maintained in the highest possible state of readiness and repair.

Question. The UH-1N helicopter unit in Panama is right in the middle of one of the most unstable parts of the world. Does the unit have a War Reserve Spares Kit?

Answer. The UH-1N unit in Panama is currently authorized Base Level Self-Sufficiency Spares (BLSS) for its wartime tasking in support of JCS approved plans. The BLSS is designed to support a unit with a wartime fight-in place requirement.

MC-130 AIRCRAFT

Question. Last year, Air Force witnesses indicated that the fiscal year 1987 budget would include funds to procure at least four MC-130 aircraft to support dedicated long range Special Operations missions. Does the fiscal year 1987 budget request sufficient funds to procure at least four MC-130 aircraft?

Answer. Yes, the fiscal year 1987 request is sufficient for five MC-130H aircraft.

Question. On October 3rd, 1983, the Deputy Secretary of Defense directed that improvements to Special Operations Forces would be implemented "not later than the end of fiscal year 1990." Does the projected procurement profile for MC-130 aircraft meet the direction given by the Deputy Secretary of Defense to have such initiatives "fully implemented" by them? Has the Deputy Secretary charged his guidance of October 1985?

Answer. On 5 Feb 86, the Secretary of the Air Force advised the House and Senate Armed Services Committees that the Air Force has reviewed the MC-130H program acquisition strategy in compliance with House Armed Services Committee direction. He reported that we have restructured the program to accelerate the acquisition and delivery schedules and keep costs in line with the FY 1986 budget. The Secretary explained that the FY 1987 President's budget funds all 21 MC-130Hs by FY 1989 in order to complete deliveries by the end of FY 1990. This restructured and accelerated program meets the direction given by the Deputy Secretary of Defense on 3 October 1983.

LACK OF MAC SUPPORT FOR SPECIAL OPERATIONS

Question. In addition to the core and augmenting forces, regular MAC aircraft can be called upon to support special operations forces should the need arise. However, according to the Committee's S&I report, in the absence of specialized special operations force equipment, "threats to safety must be overcome by crew experience". According to one senior Air Force officer quoted in the report, "MAC is relying on cockpit experience to take the place of equipment. Every time we try to get some specialized equipment . . . MAC's response is 'it's in the POM' ". Since so much of the special operations force capability depends on MAC's capability to deploy Army special forces and Navy Seals, why is MAC so reluctant to fund what is a very small program compared to such efforts as C-5 and C-17 procurement for what is such a high priority readiness requirement?

Answer. Currently, the USAF has several modification programs approved for strategic airlift aircraft that are either specially designed to enhance the deployment/employment needs of special operations forces or to enhance the general capability of our strategic airlift fleet. Aircraft assigned to units which support special operations will be the first to receive these modifications. ——— aircraft will be modified with defensive systems. These systems will provide warning and passive countermeasures for IR directed threats in the C-5 and C-141. The C-141s will also be equipped with warning and passive countermeasures against radar directed threats. In addition these ——— C-141 will be modified with Night Vision Goggle compatible cockpits to facilitate night, low level operations.

Question. According to the S&I report, MAC's own crews stated that MAC is reluctant to do anything that will divert airplanes "from their airline business". Would you agree with this conclusion by your own special operations airlift crews and the committee's investigative staff?

Answer. We do not agree that MAC is reluctant to divert airplanes from strategic airlift mobility missions in order to satisfy the special operations requirements. As MGEN W. H. Rice, Director of the Joint Special Operations Agency (JSOA), testified before the Senate Armed Services Committee on 17 April 1986, "MAC has responded magnificently" in operations he has observed over the past two years. We wholeheartedly agree.

We are currently modifying a number of stategic airlift aircraft with equipment specifically designed for the special operations mission. In addition we are working several actions with JSOA to enhance the responsiveness of Special Operations forces. ONe of these actions will be the posturing of strategic airlift assets to better satisfy Special Operations deployment requirements. JSOA will brief the results of this report to the Joint Chiefs of Staff in mid-May.

AIR FORCE CORE AIRCRAFT CAPABILITY

Question. The Air Force maintains a total of 55 active and reserve component aircraft as a "core" special operations force whose primary mission, orientation and tasking is for special operations. While other Air Force aircraft can be called in depending upon the specific scenario, except for these 55 core aircraft, all other Air Force aircraft have a primary mission other than special operations. What is the average age of the 55 core special operations forces aircraft? Is it true that the newest of these aircraft is———?

Answer. The average age of the 55 core SOF aircraft is over 21 years. The oldest of these are the AC-130A at———years and the newest are the MH-53H at———years.

Question. Despite the critical importance of these 55 aircraft to our national capability for small scale conflicts around the would, the investigative staff reports that there are problems associated with every one of the 55 aircraft. For example:

6 H-3's stationed in Arizona are being transferred from special operations forces to an air rescue mission.

4 UH-1N's in Panama are planned to be transferred from a special operations force mission to air rescue.

———.

Would you please address these problems and comment as to why the Air Force is transferring assets out of the special operations force, ———?

Answer. The 302 Special Operations Squadron (SOS) H-3s provided backfill for active duty special operations forces (SOF) H-3 combat attrition. When HH-53H PAVE LOW III helicopters replaced limited capability SOF H-3s the primary reason for retaining the 302 SOS H-3s was eliminated. As a result the 302 SOS is scheduled to convert to F-16 C/D aircraft.

As a result of Initiative 17, mission support responsibility for short-range, rotary wing, special operations in Panama will transfer from the Air Force to the Army in FQ 1/87. At that time the four specially modified UH-1Ns will transfer to combat rescue units and replace standard rescue configured UH-1s. ———.

HQ MAC and EUCOM are studying basing alternatives for both current and projected SOF in Europe.

———. These modifications will significantly improve the capability, survivability, reliability, and maintainability of these aircraft.

The 1st Special Operations Wing Operational Readiness Inspection was completed by the Military Airlift Command Inspector General during the period 2-10 Dec 85 and 3-6 Jan 86.

Question. Currently the core special operations force aircraft can accomplish ——— of the wartime mission requirement. This can be improved to ——— if the capability of non special operations force augmentation aircraft are included. By FY ——— the planned addition of ——— MC-130 aircraft will increase the core force capability to ——— of the wartime mission. What will be the total percentage capability if you include the augmented aircraft in FY ———. Is it correct that the Air Force ——— of its core special operations force requirement until FY 1999 when it will add ——— CV-22, or JVX aircraft?

Answer. The requirements and capability analysis which includes augmenting aircraft is now being coordinated with the theater CINCs. This information will be incorporated in the SOF Master Plan revision.

The special operations force, which OSD certified and forwarded to Congress in early April, plans for the Air Force to have its total complement of CV-22s by FY 96.

Question. The Air Force is planning to procure nearly 80 JVX (CV-22) aircraft for the long range special operations (SOF) mission. Although the original requirement was for a 1,000 mile range SOF capability, the most optimistic projection for CV-22 was for only 700 miles. Is it correct that the engine, recently selected for the CV-22, will have a mission radius of only 620 miles and the contractor only guarantees 550 miles?

Answer. Estimates for the Air Force CV-22 radius vary from 508 nautical miles (NM) to 574 NM dependent on payload and midmision hover requirements. The contractor guarantee of 550 NM is high and is based on a configuration which doesn't include all Air Force SOF equipment.

Question. How useful will the CV-22 be in the SOF mission if it has, say, only a 550 mile range which is little more than a long range SOF helicopter?

Answer. When compared on an equally configured basis, the CV-22 will reach almost twice the worldwide targets as the current HH-53 PAVE LOW III helicopter.

Question. Is the Air Force considering development of an alternative engine to satisfy the long range SOF requirement?

Answer. No. While we enter full scale development of the V-22 with the Allison engine, we are not currently considering development of an alternative engine.

AIR FORCE HEADQUARTERS DUPLICATION

Question. In March 1983, Air Force Special Operation Force and combat rescue assets were consolidated under the 23rd Air Force. This organization reports for operational control purposes to the Military Airlife Command. Do you agree with the statement made in the Committee's investigative report that "the establishment of both the 23rd Air Force and the 2nd Air Division was seen by some as an unnecessary layering of command because of the small number of aircraft involved?

Answer. No. The 23rd Air Force (AF) was established in March 1983 as the result of the transfer of Special Operations Forces (SOF) from TAC, USAFE and PACAF to MAC. With this transfer, MAC had the management responsibility for not only the SOF mission but also the Combat Rescue (CR), SAC Missile Site Support, Airborne Weather Reconnaissance, and Aeromedical Airlife/Evacuation missions. At the time, Headquarters Aerospace Rescue and Recovery Service (ARRS) was the focal point for CR, SAC Missile Site Support and Airborne Weather Reconnaissance resources. The 2nd Air Division was established to provide a smiliar focal point for the SOF assets that were transferred to MAC. Functions within the 2AD included specialized plans, intelligence, logistics, operations/readiness and safety. The 2AD and ARRS were assigned to the 23 AF, as was the Aeromedical Airlift/Evacuation mission and other missions. There was no increase in either the total Air Force end strength or Air Force management headquarters authorizations as a result of this action.

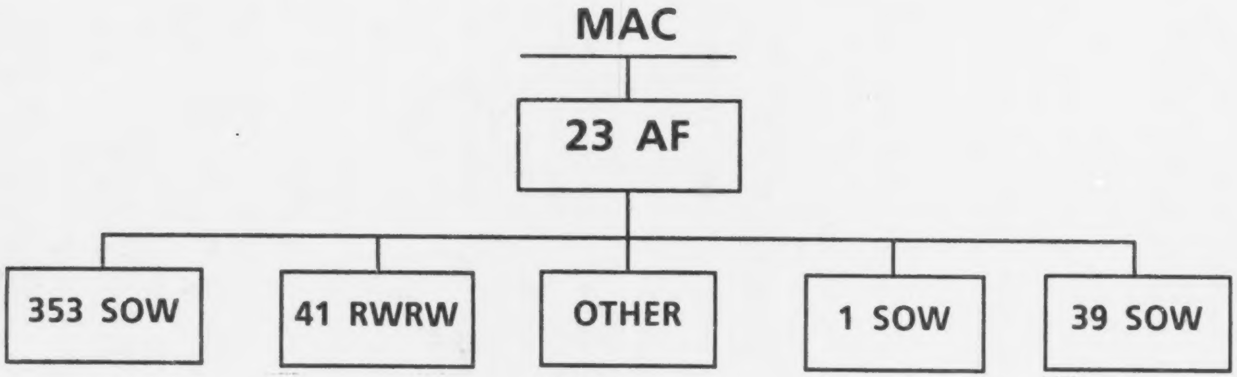
Since March 1983 there have been various organizational realignments within 23 AF. On 16 March 1986, CINCMAC submitted a comprehensive reorganizational proposal for the 23 AF which is now being staffed by Headquarters, USAF.

Question. The Military Airlift Command and the 23rd Air Force are reportedly reassesssing the current organizational structure. What does the planned reorganization look like?

Answer. A copy of the proposed organizational structure submitted by the Military Airlift Command for the 23rd Air Force is attached. The proposal is still being staffed by HQ USAF.

UNCLASSIFIED

PROPOSED STRUCTURE


MAC
23 AF
353 SOW
41 RWRW
OTHER
1 SOW
39 SOW

HQ ARRS
375 AAW
SCOTT MED CENTER
1550 CCTW
1606 ABW

SOW - Special Operations Wing

RWRW - Rescue and Weather Reconnaissance Wing

UNCLASSIFIED

Question. Reportedly, the Air Force has tentative plans to abolish the 2nd Air Force Division and retain 23rd Air Force. Since the advocacy for Air Force Special Operation programs has primarily been from the 2nd Air Division, will this advocacy be lost if the Air Force disestablishes the 2nd Air Division and places all Special Operation Forces and Air Rescue wings directly under the 23rd Air Force?

Answer. The Military Airlift Command (MAC) is considering a reorganization of Special Operations and Combat Rescue. This proposal is undergoing a thorough staffing and cost analysis and would deactivate 2nd Air Division. Military Airlift Command intends to make 23rd Air Force the focus for SOF. Once the options are scrubbed and decided upon MAC will formally present it to the Air Staff. Further comments before the study is completed would be premature.

Question. Part of the justification for establishing the 23rd Air Force was that there is a synergism between combat air rescue and Special Operations. Does Initiative 16 place air rescue firmly within the Air Force? Does Initiative 17 propose the transfer of the Special Operation Force mission from the Air Force to the Army? How can the Air Force claim "synergism" between combat and air rescue and Special Operations as justification for creating the 23rd Air Force when it intends to transfer the Special Force mission from the Air Force? Did the Air Force overlook the interrelationship between Initiative 16 and 17?

Answer. Initiative 16 has the Air Force retaining proponency for Air Force combat rescue. Initiative 17 proposes that *rotary wing support* for SOF will become an Army responsibility.

Twenty-third Air Force was created prior to the CSA/CSAF memorandum of agreement. Twenty-third Air Force manages more than just SOF and rescue helicopters. The overarching management they provide is required now and will be required regardless of who is responsible for SOF.

The Air Force did not overlook the relationship between initiatives 16 and 17.

UH-1N HELICOPTER

Question. The Air Force has ——— UH-1N helicopter gunships which can be armed with either 7.62mm mini guns or 50 calibre machine guns, 2.75 inch rockets, have auxiliary fuel tanks, upgraded navigation equipment, and a combat radius of ——— nautical miles with fully equipped A team on board.

With ——— such helicopters in the Air Force fleet, why were ——— of them, or ——— percent of the Air Force capability, transferred to an air rescue mission at the beginning of this fiscal year?

Were these aricraft physically transferred from Hurlburt Field in northern Florida to Homestead Air Force Base in southern Florida?

Despite the congressional prohibition on implementing any portion of Initiative 17, was this transfer as a direct result of the Initiative 17 proposal?

Answer. The special capabilities of the 4 UH-1Ns from Hurlburt can be better used at Homestead AFB. Specifically, those UH-1Ns are being used to support drug traffic surveillance.

Yes, the aircraft in question have been transferred to Homestead AFB, FL.

The aircraft and mission were transferred on 1 Oct 1985.

Question. The remaining four UH-1N helicopter gunships are assigned to Panama and represent the only theater special operations force airlift support in the sourthern command for Central America.

Was this unit programmed to received two additional UH-1Ns?

Was this increase cancelled as a result of Initiative 17?

Would the assignment of two additional UH-1N gunships increase the sortie rate capability by 100%?

Answer. The unit was not programmed to receive additional UN-1Ns. Initiative 17 was not a factor in cancellation of any increase since no increase was ever programmed. The theater has not identified a need for increased sortie rates. Without more specific information (mission requirement, sorties length, etc.) we cannot provide an estimate.

Question. What is involved in the "4/12 package" upgrade to the UH-1N that is currently being reviewed by the Air Staff?

Is this essentially an off-the-shelf upgrade?

Has it been proposed by a contractor or was it generated by the Air Force?

Answer. The UH-1N 412 conversion was proposed by Bell Helicopter as a two phase program. Phase One upgraded the existing UH-1N main transmission to enhance reliability and ensure compatibility with the 412 conversion. Phase Two is the actual conversion with the addition of an improved four bladed, folding, main rotor system, and strengthened airframe components.

This is essentially an off-the-shelf upgrade since the Bell 412 is in commercial use.

Bell Helicopter submitted an unsolicited 412 conversion proposal on 24 Aug 82 to the U.S. Air Force and Canadian Forces.

Question. Would the modified UH-1N have more capability to meet the requirements of the Southern Command than that of a Special Operations Forces HH-60 helicopter?

Would the upgrade model significantly improve the Air Force Special Operations Forces ability to meet the requirements of the Commander-in-Chief of the Southern Command?

Answer. A modified UH-1N would not significantly improve the Air Force ability to meet the Special Operations requirements of the Commander-in-Chief of the Southern Command.

The UH-60 has a greater range and payload capability than a modified UH-1N and has the benefit of commonality with the HH-60s of the Army's 193rd Brigade.

Question. According to the investigative staff, the upgrade would zero the airplane time, increase the air speed from 110 knots to 140 knots, reduce the acoustics signature, and provide an additional 1,000 pound payload capacity. Is this description of the upgrade accurate?

Answer. The proposed UH-1N 412 conversion strengthens certain airframe components such as the aft cross tube but does not zero the airframe time. Manufacturer data advertises a 10 knot increase in maximum airspeed (Vne) to 140 knots and a 1,400 pound increase in useful payload. The manufacturer claims that the four bladed system with lower tip speeds and swept tips reduces noise levels.

Question. Is the reported cost estimate of $1 million per aircraft accurate?

Was full consideration of the cost effectiveness of this upgrade dismissed as a result of the Air Force decision to transfer the short range special operations force airlift mission to the Army?

Answer. Yes, the estimated FY 86 cost to upgrade current USAF UH-1N aircraft to the Bell 412 configuration is $1 million per aircraft. This modification was originally considered for VIP support UH-1N aircraft assigned to the 1st Helicopter Squadron (MAC) with possible follow-on application to the other USAF helicopters.

Fiscal constraints, not the decision to transfer the SOF rotary wing mission to the Army, influenced the decision to delay any UH-1N 412 conversions.

Question. Is this upgrade currently being sold through foreign military sales?

Answer. The 4/12 upgrade program for the UH-1N helicopter is not currently being sold under the foreign military sales program.

Question. Special Operations Forces typically train and are tasked to perform missions at night therefore require the utilization of night vision devices. Although the Panama UH-1N unit possesses four aircraft, why is the Air Force ———?

Answer. Det 1, 2nd Air Division has ———. The fill rate for Det 1, 2nd Air Division is comparable to the Military Airlift Command ———. Deliveries of AN/AVS-6, initially delayed for over two years due to production problems, began in March 1986 and will gradually improve fill rates.

Question. Operational units with a mobilization tasking are normally provided a War Reserve Spares Kit. Why was the kit for the Panama unit deleted?

Answer. The Panama unit is a forward deployed inplace unit and is authorized a Base Level Self-Sufficiency Spares kit common to forward deployed units. This kit meets the unit's wartime tasking in JCS approved plans. The BLSS is designed to support a unit with a wartime, fight-in-place requirement.

Question. According to the investigative staff, "As of January 1986, these Panama aircraft were programmed for transfer to combat air rescue during the third quarter of FY 1986 and their flying hours have not been funded beyond that period."

Are you still planning to transfer these helicopters to an air rescue mission during fiscal year 1986?

Have you solved the funding problem for the flying hours for the remainder of FY 1986?

Why were these funds not originally requested?

Answer. The four helicopter authorizations will transfer to the 1 Helicopter Squadron at Andrews AFB in FY 87/2 to support expanded Federal Emergency Management Agency requirements contained in the ———. There never was a flying hour funding problem in FY 86.

HC-130 AIRCRAFT

Question. The Air Force maintains HC-130 aircraft which are specially configured to meet combat air rescue needs. In addition eight are dedicated to support special operations force helicopters and have additional modification which include some night time operational capability, upgraded radar receivers, and additional navigation equipment. However, despite the fact that these aircraft could well be deployed in an operation alongside fully configured special operations aircraft, none of these HC-130 aircraft have:

Terrain following and avoidance radar;
Precision ground mapping radar;
Forward-looking infrared;
Infrared countermeasures;
Compatible HF secure communications equipment;

Since HC-130 aircraft could be intimately involved in a special operation mission such as the attempted mission in Iran, why has the Air Force neglected to provide the full suite of equipment for the handfull of aircraft that may well determine whether a critical mission succeeds or fails?

Answer. The Air Force has completed modifying five of six currently programmed MC-130E Combat Talon Is with helicopter inflight refueling capability. These MC-130E Type I tankers will be used for inflight refueling of penetrating helicopters during missions when the threat and weather situation dictate. ———.

Question. Do you have an estimate of the cost involved per aircraft to upgrade the HC-130 aircraft to a full special operations force type I capability?

Answer. The estimated FY 86 cost to upgrade a current HC-130 P/N to a type I SOF tanker capability is $22.5M.

Question. Does the Air Force special operations force concept of operations call for these aircraft to have such a type I capability?

Answer. The Deputy Secretary of Defense's Report to the Committee on Armed Services ("Airlift for Special Operations Forces") establishes the airlift requirements for the Special Operations Forces. The report established that ———.

HH-3E HELICOPTER

Question. The Pacific Air Force maintains HH-3Es which are capable of augmenting the core special operations force airlift capability. According to a message sent by the Pacific Air Force to MAC, "The H-3 remains the most reliable of all U.S.A.F. heavy lift helicopters and its potential as an effective command asset should no longer be overlooked." Is MAC taking any steps to upgrade the capability of the HH-3Es assigned to the Pacific Air Force?

Answer. The following modifications are currently programmed for the HH-3E aircraft:

Communication

ARC-190 HF Radio Replacement
SINCGARS FM Antijam Radio
Have Quick UHF Antijam Radio

Navigation

APN-221 Doppler

Performance

T-58-100 Growth Engine
Tail Rotor Blades

Defensive system

ALE-40 Chaff/Flare

Other than modifications currently programmed, HQ MAC is not proposing additional modifications to upgrade the capability of the HH-3E helicopter.

The Air Staff is evaluating the feasibility of an extended serviceability program for the H-3.

Question. According to the investigative staff, limitations on these aircraft include:

Lack of secure communications;
Lack of radar warning receivers;
Lack of chaff and flare dispenser;
A notoriously inaccurate navigation system.

Is any action being taken to upgrade the current capability to meet special operations force requirements?

Answer. The following tactical modifications are programmed for the HH-3E helicopter:

Modification

T-58-100 Growth Engine
ALE-40 Chaff/Flare
APN-221 Doppler
SINCGARS VHF/FM Antijam Radio
Have Quick UHF Antijam Radio

Question. ———?

Answer. ———.

Question. The Air Force Reserve operates six HH-3E helicopters. All six aircraft are stationed at Luke Air Force Base and organized, trained, tasked, and equipped for Special Operations missions. Are these helicopters included in the Air Force Special Operations Forces master plan? Are they designated by headquarters MAC as core assets?

Answer. Yes, they are in the current SOF master plan and will be addressed in the upcoming revision. These helicopters are designated by headquarters MAC as core assets.

Question. With the inadequate airlift available to the Department of Defense for Special Operations Force missions, why is this squadron scheduled for disestablishment with the aircraft being transferred to an air rescue mission?

Answer. The 302nd at Luke AFB, AZ will not be disestablished, but rather will convert from a Special Operations Squadron to a tactical fighter squadron equipped with F-16C/D fighter aircraft beginning in FY87. The H-3 helicopters are currently programmed to transfer to the Air Force Reserve's 304th Aerospace Rescue and Recovery Squadron at Portland, OR, to fill shortfalls in combat rescue heavy lift helicopter capability. The 302nd SOS was originally established to backfill Special Operations Force (SOF) H-3 combat attrition at a time when active duty SOF units flew H-3s. After the nine HH-53 PAVE LOW III helicopters replaced the four limited-capability H-3s at Hurlburt in 1980, the primary reason for retaining the 302nd SOS was eliminated. As a result, the fighter conversion announcement was made in 1982.

AIR FORCE MODERNIZATION

Question. In August, 1985, the Air Force published a report of the Air Force Scientific Advisory Board entitled, "Enhancement of Special Operations Forces." This report concluded that "currently, four aircraft upgrades are being done *independently* by three different U.S. Air Force organizations. Unless appropriate, *immediate* action is taken to assure commonality of equipment of these aircraft, any hope of realizing significant benefits of commonality will be *lost!*" (Emphasis in the original). Despite the urgency of the tone of this report, as of February 1986, MAC had still not forwarded its comments. Has MAC yet responded to the findings in this report? Why has it taken MAC so long to respond since the vice commander of MAC indicated to the Committee's investigative staff that "MAC has the responsibility to pull these programs together?"

Answer. Headquarters USAF is responsible for providing direction to the field organizations for upgrade/modification and acquisition programs. The Air Force concurs with the Scientific Advisory Board's report and we are taking action to implement commonality where possible. USAF directives on SOF modification and acquisition programs contain the phrase: "commonality to other special operations forces (SOF) aircraft systems (MH-53H/J PAVE LOW III, AC-130H, and MC-130E/H) will be maintained to the maximum extent possible." The following table indicates the success this policy has had in achieving subsystem commonality in our four SOF programs:

Programs	Radar warning receiver	Infrared countermeasures	Panoramic receiver	Flare and chaff dispenser
MH-53J	Same	Same	Not installed [1]	Same.
MC-130H	Same	Same	Same	Same.
MC-130E	Same	Same	Same	Same.
AC-130H	Same	Same	Same	Same.

	Jammer	Mission computer	Digital data burst	Encryption devices
MH-53J	Different	TBD [4]	Same	Same
MC-130H	Same	Different	Same	Same.
MC-130E	Same	Same	Same	Same.
AC-130H	Different [3]	Same	Same	Same.

	Common module flir	F^3 inertial nav system	UHF/VHF/FM radios	Radar
MH-53J	Same	Same	Same	Different.
MC-130H	Same	Same	Salme	Different.
MC-130E	Same	Same	Same	Different.
AC-130H	Same	Same	Same	Different.

[1] Capability not required.

[2] AC/MC-130 jamming system not designed for a helicopter.

[3] Not programmed for the AC-130H.

[4] MH-53 mission computer has not yet been determined but commonality with either the MC-130H or MC/AC-130 mod programs is likely.

As the table shows, the only major subsystem not common is the radar. With the exception of the MC-130H Combat Talon II program, none of the other aircraft have ongoing upgrades to the radar. Pending the outcome of the flight test on the new Combat Talon II radar, the Air Force will evaluate the possibility of outfitting the SOF fleet with a common radar. However, due to different operational requirements on the AC-130 and weight and space constraints on the helicopters, one radar system may not satisfy all SOF aircraft requirements.

Question. Does the Air Force know how much, if any, of the current Air Force special operations force requirements will be offset by the Army's MH-47E and MH-60X proposed special operations force aircraft programs?

Answer. The theater CINCs requirements for Air Force helicopters will be met by the Army MH-60X and MH-47Es. The exact percentage of capability is part of the ongoing SOF requirements and capability analysis which is currently being reviewed by the theater CINCs.

Question. The theater CINC requirements are currently being revalidated. Are the new requirements yet available for special operations force aircraft?

Answer. The requirements are not ready for release. They were gathered and analyzed by a joint Army-Air Force SOF study team. The statement of requirements and proposed force structure has been returned to the theaters for command section comment prior to issuing a final study report.

Question. Are the configurations and quantities of current enhancement programs for Air Force Special Operations Forces finalized? Do these enhancement programs have significant cost consequences?

Answer. Enhancement programs have been established for existing AC-130H, EC-130E, MC-130E and MH-53H aircraft. Critical design review is complete only in the MC-130E program. The other three programs should finalize configuration no later than FY 87.

Costs of these programs are considered reasonable given the expected increase in capability, survivability, reliability, and maintainability and are in line with similar programs Service wide.

Question. The investigation staff indicates that the Air Force estimates to fully implement the revised five year special operations force master plan will be between ——— billion. Is this essentially correct?

Answer. We estimate that full implementation of the revised special operations force master plan will cost over ——— in the five year defense plan.

MILITARY AIRLIFT COMMAND

Question. Congress and this committee, in particular, have repeatedly expressed concern regarding what would appear to be a cavalier attitude on the part of Military Airlift Command, Air Force Systems Command, Air Force Logistics Command, and the Air Staff regarding the Air Force Special Operations Forces. Procurement initiatives are fragmented, the SOF Master Plan is not being implemented, what few dedicated special operations aircraft that exist are being decreased by transfer to combat air rescue, and special operations low level crews are not presently being supported with necessary equipment.

What steps has MAC taken to insure that special operations requirements are to reflect the priority given to Special Forces by the Executive Branch and Congress?

Answer. MAC has taken several steps to increase our Special Operations Forces' (SOF) capabilities. For example, 72 of our 117 funded programs contain funds for SOF and six out of the first ten unfunded programs are SOF programs. Furthermore, our Special Operations Forces now have the highest maintenance priority available—FAD-1. The following is a list of some of the completed or programmed actions to enhance MAC's SOF capability:

1. MAC SOF Tiger Team.
2. C-5 Special Operations Employment capability.
3. Expanded C-141 & C-130 Special Operations Low-Level (SOLL) capability.
4. CV/22 AF unique R&D.
5. SOLL defense systems for airlift aircraft.
6. 100% maintenance manning for SOF units.
7. Improved Talon Wartime Reserve Spares Kit (WRSK).
8. Reduced SOF aircraft Programmed Depot Maintenance (PDM) flow times.
9. Special Experience Identifiers for SOF maintenance personnel.
10. Expanded maintenance capability at Clark and Rhein-Main.
11. H-53 Infrared Counter Measures (IRCM).
12. H-53 Night Vision Goggles (NVG) compatible lighting.
13. H-53 upgrade to PAVE LOW to replace losses (2).
14. H-53 Satellite Communications (SATCOM).
15. H-53 AN/ALE 40 flare/chaff.
16. H-53 navigation improvements.
17. H-53 conversion to PAVE LOW III Enhanced (10).
18. H-53 Service Life Extension.
19. Formal school for Combat Talon.
20. Formal school for H-53.
21. Formal school for AC-130.
22. H-53 Part Task Trainer.
23. Special Experience Identifiers (SEI) for NVG qualification.
24. AN/AVS-6 night vision goggles.
25. AC-130 Phase I sensor upgrade.
26. AC-130 radar warning receiver.
27. AC-130 IRCM.
28. AC-130 tactical secure voice.
29. AC-130 Forward Looking Infrared (FLIR) replacement.
30. AC-130 Phase II sensor upgrade.
31. AC-130 "SOF Improvements".
32. 12 new gunships.
33. SOF Interim Command, Control and Communications (C^3).

34. 32 Speakeasy terminals.
35. SOF Command & Control upgrade.
36. MC-130 IRCM upgrade.
37. MC-130 APQ-122 upgrade.
38. MC-130 "SOF Improvements" package.
39. 21 new Talons.
40. HC-130 Combat Rescue mod.
41. HC-130 tactical secure voice.
42. HC-130 self-contained navigation system.
43. HC-130H conversion to tankers (20).
44. HC-130 Rescue SOLL upgrade.
45. HC-130 SOLL defensive systems.
46. 23 AF reorganization proposal.
47. HH-53 & HC-130 basing proposal.
48. Commonality.
49. Combat Control Team reorganization.
50. Additional NVG procurement.

Question. Last year the Committee directed that key positions critically affecting special operations, such as the manager for the MC-130 program, should typically be filled with individuals who have a special operations background. Have you now assigned experienced SOF personnel to such positions?

Answer. The C-130 program manager at ASD, Wright Patterson AFB, OH, is responsible for the MC-130H program. Since he works other C-130 issues, his position is not considered a key position requiring SOF experience, and the officer has none. All the officers directly responsible for MC-130H programs, however have extensive SOF experience.

We man all SOF positions with the best qualified SOF experienced officers when available. The following are key positions affecting SOF:

Position	Incumbent	SOF Background
Comdr., 1 SOW	Colonel Butler	MC-130 pilot, Nha Trang, VN
Vice Comdr., 1 SOW	Colonel Brenci	Dep Ast Dir Spec OPs, AF/XOX CMDR, 8 SOS, Hurlburt Fld, FL
DCO, 1 SOW	Colonel Newton	Dir Alft Ops, Bolling AFB, Chf Spec Plans, HQ USAFE MC-130 pilot, Nha Trang, VN
Cmdr., Det 2 23AF	Colonel Fortenberry	AC-130 pilot, Ubon RTAB, TH
Asst Dir Ops 23AF	Colonel Bradley	Ast Dir Ops, 1 SOW, Hurlburt Cmdr, 7 SOS, Rhein Main GE
Chf Jt Act Div, JSOA	Colonel Smith	Dir Ops, 1 SOS, Clark AB, RP Dir Ops, 8 SOS, Hurlburt Fld Chf Const Plns, 1 SOW, Hurlburt
Chf Reg Br, JSOA	Colonel Gallagher	Chf Ops Div, JSOSE, MacDill Dep Dir Spec Ops, HQ TAC Cmdr, 16 SOS, Hurlburt Fld Chf Stan/Eval, 1 Sow, Hurlburt
Chf Spt Act Br, JSOA	Colonel Hooten	None
Ast Dir Spec Ops, AF/XOO	Colonel Roberts	DCM, 1 SOW, Hurlburt Fld, FL ADO, 1 SOW, Hurlburt Fld, FL Cmdr, 20 SOS, Hurlburt Fld UH-1 pilot, 317 SOS, Hurlburt
Dep Ast Dir Sp, Ops AF/XOO	Colonel Hudspeth	Cmdr, 7 SOS, Rhein Main AB Chf Spt Stan/Eval, HQ USAFE ADO, 8 SOS, Hurlburt Fld, FL

Position	Incumbent	SOF Background
Chf Spec Ops Div AF/XOOS	Colonel Hess	Cmdr, 1 SOS, Clark AB, RP Chf Sp Ops Div, HQ PACAF MC–130 pilot, 1 SOS, Kadena
Alft Pgm Ofcr, AF/RDQL	Colonel Arnold	Chf Sp Plns, 8 SOS, Hurlburt MC–130 pilot, 8 SOS, Hurlburt
Dep COMSOCEUR Cmdr, 16 SOS	Colonel Jones	None
Cmdr, 16 SOS	Lieutenant Colonel Evans	DO, 16 SOS, Hurlburt Fld
Cmdr, 8 SOS	Lieutenant Colonel Miles	DO, 8 SOS, Hurlburt Fld, Fl Sp Ops Ofcr, REDCOM, MacDill MC–130 pilot, Hurlubrt Fld
Cmdr, 1 SOS	Lieutenant Colonel Jahnke	DO, 1 SOS, Clark AB, RP Chf Air Ops, SOCEUR MC–130 pilot, 7 SOS, GE
Cmdr, 7 SOS	Lieutenant Colonel Bortner	DO, 7 SOS Rhein Main AB, GE
Cmdr, 20 SOS Spec OPs Pgm, AF/PRP.	Lieutenant Colonel Grant	DO, 20 SOS, Hurlburt Fld
Spec Ops Pgm, AF/PRD	Major Colvin	Spec Ops Ofcr, AF/XOOS MC–130 pilot, 8 SOS Hurlburt
SOF Pgm Mgr, WR–ALC	Lieutenant Colonel Barnes	HH–53H pilot, 20 SOS, Hurlburt
Chf Mc–130H Avns, ASD	Lieutenant Colonel Schott	Chf Plns, 1 SOS, Clark AB MC–130 pilot, 1 SOS, Clark
Proj Ofcr MC–130H ECM ASC	Major Churchill	Ast Chf Tactics, HQ MAC MC–130 EWO, 8 SOS, Hurlburt MC–130 EWO, 7 SOS, GE

HH–53C HELICOPTER

Question. The HH-53C helicopter is a much less capable version of the Pave Low III HH-53H helicopter.

Does the concept of operations call for a ———?

Answer. Although wartime special operations involve ———.

Question. Does the HH-53C have a communications system which is compatible for secure communication with the HH-53H Pave Low III helicopter?

With the significantly less capability that is offered by the HH-53C helicopter, could it not be critical for this aircraft to be able to communicate in a secure fashion with the HH-53H Pave Low III helicopter in the course of a clandestine mission over hostile territory?

Answer. We agree that secure communications between HH-53C and HH-53H Pave Low helicopters during clandestine missions is a critical element to overall mission success.

HQ Military Airlift Command (MAC) currently operates 13 combat coded HH-53C helicopters (all assigned to combat rescue).

In 1980, 5 of these HH-53C helicopters were modified to incorporate provisions for secure UHF, HF and FM communications. During exercises/contingency operations secure coder/decoder equipment, compatible with the HH-53H Pave Low III helicopter, is installed.

In response to DEPSECDEF guidance, the Air Force is modifying 10 HH-53C aircraft to the Pave Low III configuration. The remaining combat rescue HH-53Cs are included in this modification which incorporates secure communication upgrades.

RETIREMENT OF AC-130A AIRCRAFT

Question. The Air Force is procuring 12 new AC-130H gunships. These aircraft are currently planned for the active Air Force, with the existing old H models reverting to the Air Force Reserve to replace the old AC-130A models currently assigned to the 711th Special Operations Squadron. It is expected that these A models will be sent to disposal at Davis-Monthan Air Force Base.

In view of the current interest in C-130 type aircraft, has the Air Force considered the viability of removing the sensitive equipment from the AC-130A aircraft currently assigned to the 711th SOS and making the airframes available as a foreign military sales (FMS) item?

Answer. The AC-130A aircraft are among the oldest aircraft in the US Air Force and are also among the least suitable for FMS. The cost to demodify them from gunship to airlift configuration could exceed the value of the aircraft. Furthermore, the Air Force has programmed the retirement of several airlift C-130As in FY87. These aircraft are generally in better condition than the AC-130As and a portion will be available for FMS.

WEAPON SYSTEMS TRAINER

Question. During the Investigative Staff review of Air Force Special Operations Forces it was determined that: ———?

Answer. Air Force has dedicated funds for Special Operations Forces (SOF) Weapons System Trainers.

MAC and DARRA jointly developed a part task trainer for the MH-53H PAVE LOW. Air Force recently provided funds for final procurement and delivery is scheduled for August 1986.

MAC has provided a Program Decision Package (PDP) for the development of a SOF Fixed Wing Weapons System Trainer designed to satisfy the requirements of the MC-130E, Mc-130H and the AC-130H. PDP specifies training for pilots, navigators, and loadmasters and includes academics, part task trainers, and full-up simulation. System will be capable of accepting available digitized data for contingency rehearsal. Anticipate contracting logistic support, instruction, courseware, and a family of trainers. Air Force has programmed funds to begin development in FY 88.

Question. According to our investigative Staff, the 1st Special Operations Wing has requested funding of less than ——— for the last 2 years for a weapons system trainer which has been cut either by Military Airlift Command or the Air Staff. Why did MAC and the Air Staff delete these funds? Given the high readiness requirement for SOF aircrews and the reported documentation available to justify the use of trainers for many other weapons systems, would be ——— investment pay for itself over a very few years?

Answer. Funds for fixed wing special operations weapon system trainers competed with all other Air Force/Military Airlift Command requirements during normal budget cycle. Those funds were moved to later in the FYDP because of competing higher priority requirements. Development is programmed to begin in FY 88. Air Force and Military Airlift Command expect the system when fielded to be cost effective both in funds required and mission capability.

Air Force expended $1.042M in FY 86 to procure a DARPA/MAC developed part task trainer for the MH-53H, PAVE LOW. Equipment delivery is expected in August 1986.

EQUIPMENT COMMONALITY

Question. There are currently at least eight major Air Force programs, all with different managers who could be procuring different virsions of similar equipment for these forces when they have similar requirements. Since these forces will often collocate and employ together, and may rely on the same cadre of maintenance support, the benefits of commonality among systems has been stressed in numerous reviews. What are Military Airlift Command and the Air Force doing to insure that AFSOF enhancement program managers are coordinating procurement initiatives to insure the lowest cost to the Government and commonality of systems and system components?

Answer. The Air Force agrees that commonality of subsystems among the AFSOF aircraft is desirable. Headquarters USAF is responsible for providing direction to Air Force Systems Command and Air Force Logistics Command for the SOF upgrade/modification and acquisition programs and for the past three years has directed commonality in the SOF programs. USAF directives contain the phrase: commonality in the SOF programs. USAF directives contain the phrase: "commonality to other special operations forces (SOF) aircraft systems (MH-53H/J PAVE LOW, AC-130H, and MC-130E/H) will be maintained to the maximum extent possible." The following table indicates the success this policy has had in achieving subsystem commonality in our five ongoing SOF programs:

Programs	Radar warning receiver	Infrared countermeasures	Panoramic receiver	Flare and chaff dispenser
MH-53J	Same	Same	Not installed [1]	Same.
MC-130H	Same	Same	Same	Same.
MC-130E	Same	Same	Same	Same.
AC-130H	Same	Same	Same	Same.
AC-130U	Same [2]	Same	Same	Same [2]

	Jammer	Mission computer	Digital data burst	Encryption devices
MH-53J	Different [3]	TBD	Same	Same.
MC-130H	Same	Different	Same	Same.
MC-130E	Same	Same	Same	Same.
AC-130H	Different [4]	Same	Same	Same.
AC-130U	Same	TBD [2]	Same	Same.

	Common module flir	F^3 inertial nav system	UHF/VHF/FM radios	Radar
MH-53J	Same	Same	Same	Different.
MC-130H	Same	Same	Same	Different.
MC-130E	Same	Same	Same	Different.
AC-130H	Same	Same	Same	Different.
AC-130U	Same	Same	Same	TBD.

[1] Capability not required.

[2] Final aircraft configuration may be different pending outcome of AF development programs which could provide more capable subsystems in the early 1990 timeframe coinciding with AC-130U installation schedule.

[3] AC/MC-130 jamming system not designed for a helicopter.

[4] Not programmed for the AC-130H.

[5] MH-53 and AC-130U mission computer has not yet been determined but commonality with either the MC-130H or MC/AC-130 mod programs is likely.

As the table shows, the only major subsystem not common is the radar. Pending the outcome of the flight test on the new Combat Talon II radar, the Air Force will evaluate the possibility of outfitting the SOF fleet with a common radar. However, due to different operational requirements on the AC-130 and weight and space constraints on the helicopters, one radar system may not satisfy all SOF aircraft requirements.

Our sixth major SOF acquisition program is the CV-22. We are striving for as much commonality as possible; however, due to the timeframe in which the CV-22 will be procured, improvements to current subsystems will be incorporated to the maximum extent possible. Future upgrades to the current aircraft will include many of these improvements and result in increased commonality in the SOF fleet.

The Air Staff and Military Airlift Command hiave studied various aspects of the commonality issue and identified opportunities to achieve commonality in these programs. The Air Force is forming a Special Assistant for SOF organization within the office of the Deputy Chief of Staff for Research, Development and Acquisition and a consolidated SOF Systems Program Office at Aeronautical Systems Division, Wright Patterson Air Force Base, OH. These two new SOF organizations in the Research and Development area will be structured to ensure harmony between the SOF acquisition programs (MC-130H Combat Talon II, replacement AC-130 Gunships, and CV-22A VSTOL aircraft) and also with the ongoing modification programs to maximize commality and the resulting benefits to the Air Force. The increased emphasis that the Air Force has placed on commonality is directed at improving the effectiveness and efficiency of the Special Operations Forces; however, the current SOF readiness problems are not caused by the lack of commonality in the existing SOF assets.

Question. Could the lack of avionics commonality among these aircraft have a significant effect on maintenance support, training, cost and deployability of maintenance support equipment and war readiness spares?

Answer. Significant differences between MH-53, AC-130, and MC-130 basic aircraft platforms cause the greatest impact on maintenance support, training, cost, and deployability of maintenance support equipment and war readiness spares. Special mission avionics equipment is a subset of each SOF weapon system. Lack of special mission avionics commonality is believed to be less of a problem in the area addressed than the significant differences in basic weapon systems. Readiness has not been impaired by the existing level of special mission avionics commonality. On-going and planned modification programs have been structured to yield optimum commonality. Dedicated SOF logistics management organizations in the Military Airlift Command and the Air Force Logistics Command provide oversight needed to ensure future initiatives adequately consider commonality requirements.

Question. Did the Air Force Scientific Advisory Board conclude in August of 1985 that lack of commonality could be a problem?

Answer. Yes, the Air Force Scientific Advisory Board's Panel on the Enhancement of Special Operations Forces (the 1985 Summer Study) made two overall observations about lack of commonality. First, regarding the existing special operations assets, the Panel observed that the lack of commonality of equipment among SOF aircraft has significantly complicated logistics and training, but the Panel did not make any related recommendations. Second, regarding the current SOF aircraft upgrades (MC-130E Combat Talon I upgrade, MC-130H Combat Talon II procurement, AC-130 Gunship upgrade, and HH-53 modifications and upgrade), the Panel observed that these upgrades are being done by three different Air Force organizations. The observation was made that unless appropriate, immediate action is taken any hope of realizing the significant benefits of commonality will be lost. The Air Force has taken these observations seriously. A SOF Panel has been formed to better focus the Air Staff activities, relating to SOF programs. A SOF organization has been formed within Warner Robins Air Logistics Center (WR-ALC) to centrally manage all SOF logistics and modification efforts. Air Force Logistics Command is working to transfer program management responsibility for the MC-130E Combat Talon I to this new WR-ALC office. The AC-130 Gunship upgrade program has been contracted to Lockheed Air Services, Ontario, CA, which is also the contractor for the MC-130E upgrade and, where feasible, commonality will be achieved between these two upgrade designs. The Air Staff and Military Airlift Command have studied various aspects of the commonality issue and identified opportunities to achieve more commonality in these programs. The Air Force is forming a Special Assistant for SOF within the office of the Deputy Chief of Staff for Research, Development and Acquisition and a consolidated SOF Systems Program Office at Aeronautical Systems Division, Wright Patterson Air Force Base, OH. These two new SOF organizations in the Research and Development area will be structured to ensure harmony between the SOF acquisition programs (MC-130H Combat Talon II, replacement AC-130 Gunships, and CV-22A VSTOL aircraft) and also with the ongoing modification programs to maximize commonality and the resulting benefits to the Air Force. The increased emphasis that the Air Force has placed on commonality is directed at improving the effectiveness and efficiency of the Special Operations Forces; however, the current SOF readiness problems are not caused by the lack of commonality in the existing SOF assets.

AIR FORCE SOF TASKINGS

Question. Commanders of Air Force Special Operations Forces stated that Core Special Operations aircraft were being significantly tasked to support a variety of contingencies and exercises, some of which were irrelevant. What functional position in Military Airlift Command headquarters is responsible for monitoring Special Operations forces unit taskings to insure tasking is appropraite? Does this same activity monitor readiness reporting and aircrew training progress?

Answer.

1. The HQ MAC Deputy Chief of Staff for Operations is responsible for overal monitoring of Special Operations Forces taskings, readiness reporting, and training progress. Specific funtional responsibilities are outlined below.

2. HQ MAC Special Missions Management Division (DOOS) monitors and approves SOF tasking for the following:

a. JCS Exercises. HQ MAC Director of Current Operations (DOO) and 23 AF/DOOX attend planning meetings and develop proposed force lists. These lists are coordinated through HQ MAC/DOOS to determine supportability. When tasked unit determines unsupportability, changes are made in tasking. (MC-130E tasking reduced and HH-53Hs removed for Exercise FOAL EAGLE.)

b. Tests and Modifications. Special Missions Operational Test and Evaluation Center (SMOTEC) coordinates with 1 SOW for test dates. Test proposal submitted to HQ MAC Test and Evaluation Division (XPQT) and coordinated through HQ MAC/DOOS (which coordinates with 23 AF). HQ MAC/DOOS coordinates conflicts but does not monitor detailed scheduling.

c. Support to Army, Navy, and USAF Users. Formal requests are sent to HQ MAC/DOO. HQ MAC/DOOS coordinates through 23 AF, 2 AD, and 1 SOW. Unit determines supportability, and tasking is provided to the unit or disapproval is sent to the user. Unit training is the exception to this policy and is provided to the user on an as available basis.

d. JSOC Support. These requests are sent to HQ MAC/DOO for approval. They are coordinated through 23 AF and are approved or disapproved based on the unit's ability to support.

e. Contingency Tasking. Contingencies are tasked through the HQ MAC/DOOS representative in the MAC Crisis Response Cell.

f. VIP Visits. These demonstrations are normally requested from HQ USAF and in some cases the unit has been tasked directly without HQ MAC coordination. This tasking has normally been fulfilled due to political ramifications and a real desire to promote SOF.

g. Real World Commitments. Continuous operations such as OPBAT and BLINKING LIGHT are also monitored through HQ MAC/DOOS.

3. HQ MAC/DOOS monitors and approves SOF tasking based on numerous inputs to include readiness, training, and C-status. The following criteria is used in approving all requests:

a. All taskings/requests (missions, modification, maintenance, demonstrations, etc.) involving special operations aircraft under the operational control of CINCMAC are coordinated through HQ MAC/DOOS and approved by HQ MAC/DOO.

b. Unit aircraft will first be allocated to accomplish unit training, formal school training, and real world contingencies with the remaining assets allocated using the JCS SOF priority system.

c. Exercise participation will be closely monitored and training benefits will be a deciding factor in determining which assets are force listed.

d. Every attempt will be made to minimize the impact of periodic inspections, modifications, and tests on training and readiness.

Question. What is the procedure for focusing command attention on these problems? Are crew training and other tasking problems masked in UNITREP by equipment problems?

Answer. HQ MAC has established a SOF Tiger Team made up of members from across the MAC staff to investigate and make recommendations up through the MAC Council on all areas of special operations to enhance present as well as future mission readiness and accomplishment.

Equipment problems do not mask either crew training or other tasking problems. Although the potential for masking does exist, HQ MAC initiates UNITREP data base retrievals which list all shortfalls. These retrievals are reviewed on a recurring basis to insure that all appropriate problem areas are brought to the attention of appropriate command agencies.

Question. Has the level of exercise and demonstration activity increased since Military Airlift Command assumed command? Has Headquarters Military Airlift Command established criteria for turning down exercises or other taskings based on degraded unit C-status or because the mission can be accomplished with other less specialized aircraft?

Answer. Due to the increased emphasis by SECDEF on SOF, the unified commanders, as a whole, have increased the SOF participation in many of their conventional exercises to have a full spectrum of warfare scenario. This in turn has drawn still more attention to SOF from both military and political leaders on its capabilities. In order to better understand the SOF systems and capabilities, more and more demonstrations are being requested. These visits and demonstrations have been very beneficial in educating our leadership, but they have had an adverse impact on unit training. HQ MAC has made an effort to limit SOF participation in exercises by monitoring training benefits and to limit the number of VIP demonstrations.

HQ MAC Special Missions Management Division (DOOS) monitors and approves SOF tasking based on numerous inputs to include C-status. The following criteria is used in approving all requests:

a. All taskings/requests (missions, modification, maintenance, demonstrations, etc.) involving special operations aircraft under the operational control of CINCMAC are coordinated through HQ MAC/DOOS and approved by HQ MAC Director of Current Operations (DOO).

b. Unit aircraft will first be allocated to accomplish unit training, formal school training, and real-world contingencies, with the remaining assets allocated using the JCS SOF priority system.

c. Exercise participation will be closely monitored, and training benefits will be a deciding factor in determining which assets are force listed.

d. Every attempt will be made to minimize the impact of periodic inspections, modifications, and tests on training and readiness.

1ST SOW OPERATIONAL READINESS INSPECTION

Question. On March 1, 1983, the Air Force transferred Special Operations from the Tactical Air Force to the Military Airlift Command. Two and one-half years later, the 1st Special Operations Wing was given its first Operational Readiness Inspection under Military Airlift Command criteria. The Operational Readiness Inspection was halted prior to completion. Several reasons have been offered which include: (1) the aircraft had not been properly supported; (2) Military Airlift Command operational criteria, while relevant for airlift, were not relevant for Special Operations Forces, (3) the aircraft are too old and too overtasked to meet readiness requirements. Was the Operational Readiness Inspection not completed? How does the Military Airlift Command's Operational Readiness Inspection criteria differ from the Tactical Air Force criteria used for the wing's prior Operational Readiness Inspection? How did management fare on the follow-on Functional Management Inspection and what, if any, were the findings? What was the readiness rating C-status of these units prior to the Operational Readiness Inspection?

Answers.

1. MAC completed the Operational Readiness Inspection of the 1 SOW on 3-6 Jan 86. Subsequently, the HA MAC Inspector General issued an inspection report which reflected an overall marginal rating. CINCMAC directed a reinspection, based on the marginal rating, which will probably occur this summer.

2. The Military Airlift Command and the Tactical Air Command have different inspection philosophies; however, we offer the following comments: TAC based the employment grade on command and control, electronic warfare, sortie generation, aircrew participation, mission planning, and sortie effectiveness. MAC's employment criteria is composed of six weighted subareas (briefing, mission planning, takeoff time, mission reliability, employment event, and ECM/Self-Defense) for each type employment event. Further, MAC's inspection criteria places emphasis on actual deployments and operation from a deployed operating location. Prior ORIs under TAC simulated deployment (homestation ORIs).

a. The current AC-130 aircraft weapons employment criteria is basically the same as that used by TAC. MAC's actual hit criteria is slightly less restrictive than that used by TAC.

b. The employment criteria for MC-130 differs as MAC's criteria is more specified in drop zone sizes. The TAC criteria for aircrop was 300 meters from the designated point of impact, while MAC's criteria has specific drop zone sizes for each type event.

c. Employment criteria for special operations helicopter units is basically the same as that used in TAC.

3. Regarding the question of the follow-on FMI, the 1 SOW was not addressed in this FMI.

4. The C-ratings of these units are as follows: ———.

[CLERK'S NOTE.—End of questions submitted for the record.]

Mr. CHAPPELL. We will now go into a special access session at this point.

TUESDAY, APRIL 22, 1986.

COMPLEMENTARY EXPENDABLE LAUNCH VEHICLE (CELV) REPROGRAMMING

Reprogramming No. 86–6N

WITNESS

MAJOR GENERAL DONALD J. KUTYNA, DIRECTOR, SPACE SYSTEMS, C3, DEPUTY CHIEF OF STAFF, RESEARCH, DEVELOPMENT AND ACQUISITION

COLONEL JOHN W. MANSUR, MILITARY ASSISTANT TO THE UNDER SECRETARY OF THE AIR FORCE

INTRODUCTION

Mr. CHAPPELL. The committee will resume.

We are now on the Complementary Expendable Launch Vehicle Reprogramming.

Last year the Air Force proposed a $3 billion initiative to procure 10 Complementary Expendable Launch Vehicles (CELVs) as a complementary alternative to the Space Shuttle for launching heavy payloads into space. Congress approved the budget request in full, and invited the Department to submit a multiyear procurement request for these 10 vehicles.

Today, the committee will consider a reprogramming request from the Air Force which proposes to realign fiscal year 1985 and 1986 procurement funds to allow purchase of tooling and advance procurement of long-lead CELV parts and components.

Multiyear authority for the 10 vehicle CELV acquisition is a fiscal year 1987 budget issue for the Congress, but approval of this reprogramming request will in fact initiate it now.

We will place the reprogramming document in the record at this point.

[The document follows:]

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Page 1 of 3 Pages

REPROGRAMING ACTION

Appropriation Account Title: Missile Procurement, Air Force, 85/87; 86/88

DoD Serial Number: **FY 86-6 N**

Component Serial Number: FY 86-5 N

(Amounts in Thousands of Dollars)

LINE ITEM	Program Base Reflecting Congressional Action		Program Previously Approved by Sec Def		Reprograming Action		Revised Program	
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
a	b	c	d	e	f	g	h	i

NOTIFICATION ACTION

This reprograming action is submitted in order to allow the Air Force to proceed with the Complementary Expendable Launch Vehicle (CELV) program using the full funding concept as directed by the Congress. This increase is for a higher priority item than the item for which funds were originally appropriated. This item is based on an unforeseen military requirement and the item for which reprograming is requested has not been denied by Congress. This request meets all the administrative and legal requirements of the Congress. The FY 1986 portion is reflected in the FY 1986 column of the FY 1987 President's budget but the FY 1985 portion is not reflected in the FY 1985 column of the FY 1987 President's budget.

In support of the President's National Space Policy, the Department of Defense (DoD) began development of an upgraded expendable launch vehicle system in FY 1985 to complement the Space Shuttle. This CELV system will be utilized to provide an assured access to space for critical DoD satellites launching from the Eastern Test Range at Cape Canaveral Air Force Station, Florida. The CELV system will provide a capability which truly complements the Space Transportation System at an affordable cost, meets DoD schedule requirements, maintains a vital ELV industrial base in the U.S., supports the President's policy on ELV commercialization, and provides growth capability if future requirements materialize.

Congress directed full funding of the CELV procurement and invited submission of a DoD request for a multiyear procurement (MYP) of ten CELVs. This reprograming, which would be necessary to support either annual procurements or multiyear procurement, will provide the necessary advance procurement for annual procurement of one fully funded CELV in FY 1987 or for advance economic order quantity procurement to support MYP in FY 1987. It also provides additional FY 1985 funds to the CELV program to fully fund production tooling. The Air Force will submit MYP budget exhibits to justify advance procurement leading to a multiyear contract. A second set of multiyear justification material based on contractor proposals for a fully funded annual buy and a multiyear buy will be submitted to Congress in June 1986 to support a final decision on CELV multiyear procurement in the FY 1987 Defense Appropriations Act.

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CLASSIFICATION

Page 2 of 3 Pages

REPROGRAMING ACTION

Appropriation Account Title: Missile Procurement, Air Force, 85/87; 86/88

DoD Serial Number: *FY 86-6 N*

Component Serial Number: FY 86-5 N

(Amounts in Thousands of Dollars)

LINE ITEM	Program Base Reflecting Congressional Action		Program Previously Approved by Sec Def		Reprograming Action		Revised Program	
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
a	b	c	d	e	f	g	h	i
NOTIFICATION ACTION								
REPROGRAMING INCREASES:								
Missile Procurement, Air Force, 85/87								
Budget Activity 5: Other Support								
Space Boosters	XX	24,257	XX	24,257	XX	+25,000	XX	49,257
Explanation: Funds are required for necessary non-recurring tooling in order to proceed with full funded procurement of the CELV program as directed by the Congress.								
Total Reprograming Increase (Msle Proc, AF, 85/87)						+25,000		
Missile Procurement, Air Force, 86/88								
Budget Activity 5: Other Support								
Space Boosters-Advance Procurement (CY)	XX	44,596	XX	44,596	XX	+71,547	XX	116,143
Explanation: Additional funds are required for CELV advance procurement to provide for advance economic order quantity procurement leading to multiyear procurement of the CELV.								
Total Reprograming Increase (Msle Proc, AF, 86/88)						+71,547		
Total Reprograming Increases						+96,547		
REPROGRAMING DECREASES:								
Missile Procurement, Air Force, 85/87								
Budget Activity 5: Other Support								

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Page 3 of 3 Pages

REPROGRAMING ACTION

Appropriation Account Title: Missile Procurement, Air Force, 85/87; 86/88

DoD Serial Number: FY 86-6 N

Component Serial Number: FY 86-5 N

(Amounts in Thousands of Dollars)

LINE ITEM	Program Base Reflecting Congressional Action		Program Previously Approved by Sec Def		Reprograming Action		Revised Program	
	Quantity	Amount	Quantity	Amount	Quantity	Amount	Quantity	Amount
a	b	c	d	e	f	g	h	i
NOTIFICATION ACTION								
Space Launch Support (MYP)	XX	106,481	XX	102,981	XX	-25,000	XX	77,981
Explanation: Funds are available because modification of two Inertial Upper Stages (IUS's) into a Space Shuttle configuration is no longer required. Reinstatement of funds is not required.								
Total Reprograming Decrease (Msle Proc, 85/87)						-25,000		
Missile Procurement, Air Force, 86/88								
Budget Activity 5: Other Support								
Space Boosters	1	75,947	1	75,947	-1	-71,547	-	4,400
Explanation: Appropriated funds are not sufficient to fully fund one CELV in FY 1986. However, funds are needed for advance procurement leading to multiyear procurement of the CELV. Reinstatement of funds is not required.								
Total Reprograming Decrease (Msle Proc, 86/88)						-71,547		
Total Reprograming Decreases						-96,547		

Approved (Signature and Date) William H. Taft

William H. Taft, IV
Deputy Secretary of Defense

17 MAR 1986

DD FORM 1415-2
1 Mar 83

UNCLASSIFIED
CLASSIFICATION

Replaces DD Form 1415-2
1 Jul 79 which is obsolete

Mr. CHAPPELL. We are happy to have Major General Donald J. Kutyna from the Office of the Air Force, Deputy Chief of Staff for Research and Development, testify in support of this proposal.

The committee is aware that General Kutyna is a member of the panel which is investigating the Space Shuttle Challenger accident, but is not at liberty to discuss the panel's findings and recommendations at this time.

General, we hope to have a very brief hearing in order to expedite approval of your request.

General Kutyna, would you please briefly summarize your statement for us now?

We are pleased to have you with us. You may proceed.

SUMMARY STATEMENT OF GENERAL KUTYNA

General KUTYNA. We are pleased to be here.

Being on that Presidential Commission has taught me a lot, especially that it is a lot more fun to be on your side of the microphone than this.

Mr. CHAPPELL. You think the questions are easier asked than answered?

General KUTYNA. Yes, sir. I am a little rusty on the Pentagon job, but I would summarize our request, if I can.

As a result of that Challenger loss, there is an extensive backlog of space launches to be made up, and the recent Titan loss last week just adds to that problem.

We awarded the CELV contract in February 1985 to complement the Space Transportation System [STS] in anticipation of the situations such as these, and all agreed with the need for that particular vehicle.

However, for many reasons we planned that contract and purchase on an incremental funding basis. Of course we have been directed to go full funding presently with the possibility of going to multiyear.

In restructuring the program, in anticipation of a multiyear, the funding appropriations are not optimally aligned to execute that program at the lowest cost and on schedule. Therefore, I am here today to ask for two adjustments, as you noted, first in fiscal year 1985; because of the move from incremental to full funding, we need to move tooling for the contract from a stretched-out basis to the front of the contract, and therefore, I would like to ask for reprogramming of $25 million, in excess inertial upper stage funds into the space boosters account to purchase that tooling. And then, I would like to use $20 million which were savings from our negotiations on the Transtage, Upper Stage and again put the savings toward the CELV tooling.

The total for 1985 would be $45 million to go towards the tooling for the CELV program. In fiscal year 1986, we have $121 million in procurement funding but only $42 million of that is in advanced procurement. As of this date, we have obligated that $42 million and to preserve our option to go to the multiyear, we are requesting that the remaining $80 million be reprogrammed from the procurement account to the advance procurement account to allow the program to proceed as effectively as it can.

That ends my summary, sir, and I am ready to answer any questions. I will be happy to discuss with you whatever questions you may have.

Mr. CHAPPELL. Thank you very much, General.

[The statement and biographical sketch of General Kutyna follow:]

STATEMENT BY THE DIRECTOR, SPACE SYSTEMS AND C^3

Mr. Chairman and members of the Committee:

I appreciate the opportunity to appear before you to discuss the reprogramming action for our Complementary Expendable Launch Vehicle (CELV) program.

Recent testimony by NASA and DOD before several Congressional Committees recommended a robust mix of launch vehicles properly balanced between the Space Shuttle and expendables to provide the nation an assured access to space. As a result of the Challenger loss, there will be an extensive backlog of DOD and civilian Shuttle missions. The recent Titan loss and launch delays resulting therefrom will most probably add to that backlog. Although our Titan program has suffered a set back, the nation will still have the ability to generate additional launch capability in approximately two years as a result of Congressional approval of the CELV and Titan II programs.

In February 1985, we awarded a contract to acquire 10 CELVs to provide a launch capability to place 10,000 pound, Shuttle equivalent payloads into geosynchronous orbit. Our FY 85 efforts concentrated on development tasks and in FY 86 we started the procurement of long lead materials to support the planned FY 87 CELV acquisition. We have obligated all available FY 86 advance procurement funding, approximately $42 million, and have requested Congressional approval for a reprogramming to continue program execution.

The CELV reprogramming request before you is composed of two financial adjustments. First, we propose to realign the entire FY 86 Space Boosters procurement funding to advance procurement. This will allow us to proceed with the CELV program using the full funding concept directed by your committee. We need this realignment to protect implementing either a multiyear procurement or annual contracting for 10 CELVs. Last year your committee supported aligning all CELV procurement funds in the advance procurement line.

The second adjustment that we ask you to support is an FY 85 reprogramming of $25 million missile procurement from Space Launch Support (retitled Space Shuttle Operations in FY 87) into Space Boosters. The additional $25 million, along with approximately $20 million of FY 85 funds already resident in the Space Boosters line will be used to purchase non-recurring start-up and production tooling for CELV. The $20 million FY 85 funds are now available as a result of successful Transtage procurement negotiations. The $25 million in the Space Launch Support program is available because we no longer had to modify two Inertial Upper Stages (IUS's) into a Space Shuttle configuration as a result of the flight anomaly on IUS in 1983 which delayed the program. Consequently, two IUS's were available to the CELV program to support our decision necessitated by FY 86 funding constraints to defer the Centaur upper stage development and production for the CELV by 18 months. Like the FY 86 advance procurement adjustment, we need the funding for CELV production tooling for either a multiyear or annual contracting approach.

In last year's language, your committee invited multiyear request for the CELV program. In response to that support, we have submitted notification of our intent to convert the CELV contract to a multiyear procurement. Our multiyear procurement documentation was submitted with the reprogramming requests for your approval. The cost avoidance to be realized for this multiyear exceeds 20 percent for the 10 CELV production effort compared to a similar production profile with annual contracting. We request your support of the CELV multiyear during FY 87 deliberations.

This concludes my formal remarks.

BRIGADIER GENERAL DONALD J. KUTYNA

Brigadier General Donald J. Kutyna is the Director for Space Systems and Command, Control, Communications, Office of the Deputy Chief of Staff, Research, Development and Acquisition, Headquarters U.S. Air Force, Washington, D.C. In this capacity he is responsible for providing the requirements, direction and budgetary support for the development and acquisition of all Air Force space programs, atmospheric and space surveillance and warning systems, and the major Air Force and Department of Defense tactical and strategic communications capabilities.

General Kutyna was born December 6, 1933, in Chicago. He graduated from Chicago's Lane Technical High School in 1951, attended the University of Iowa for two years, and subsequently was appointed to the U.S. Military Academy, West Point, N.Y., graduating with a bachelor of science degree in aeronautics and astronautics from the Massachusetts Institute of Technology, Cambridge, in 1965, and graduated from the Industrial College of the Armed Forces, Fort Lesley J. McNair, Washington, D.C., in 1976.

Upon completion of pilot training at Vance Air Force Base, Okla., in September 1958, General Kutyna was assigned to the 33rd Bombardment Squadron at March Air Force Base, Calif., as a B-47 combat crew member until June 1963. Following graduation from the Massachusetts Institute of Technology in June 1965, he was assigned to the Aerospace Research Pilot School, Edwards Air Force Base, Calif., first as a student and then as a staff member, training test pilots and astronauts for U.S. aircraft and space programs.

From November 1969 to October 1970, he served a combat tour of duty with the 44th Tactical Fighter Squadron at Takhli Royal Thai Air Force Base, Thailand, flying F-105 tactical fighters. He completed 120 combat missions and served as flight commander and on the wing staff. Upon his return from Southeast Asia. General Kutyna was assigned to Air Force headquarters as a development planner in the Office of the Deputy Chief of Staff for Research and Development. In January 1973 he assumed duties as a member of the Air Force Scientific Advisory Board Staff and, in June 1973, he was assigned as executive officer to the under secretary of the Air Force.

In August 1975 he entered the Industrial College of the Armed Forces. After graduation in July 1976, he transferred to Electronic Systems Division, Hanscom Air Force Base, Mass., with duty as assistant deputy for international programs. He also served as program manager for foreign military sales of the E-3A Airborne Warning and Control System aircraft and later as assistant director for the overall E-3A program.

General Kutyna became deputy for surveillance and control systems at Electronic Systems Division in June 1980. In this position he was responsible for the development, acquisition and deployment of electronic systems to include deep space sensors, ballistic missile warning radars, air defense warning systems, air and space defense command centers, air traffic control systems, and several foreign military sales programs.

The General is a command pilot with more than 4,000 flying hours in 25 different fighters and bombers. His military decorations and awards include the Distinguished Service Medal, Legion of Merit with one oak leaf cluster, Distinguished Flying Cross with one oak leaf cluster, Air Medal with eight oak leaf clusters and Air Force Commendation Medal with two oak leaf clusters.

He was promoted to brigadier general Aug. 1, 1982, with same date of rank.

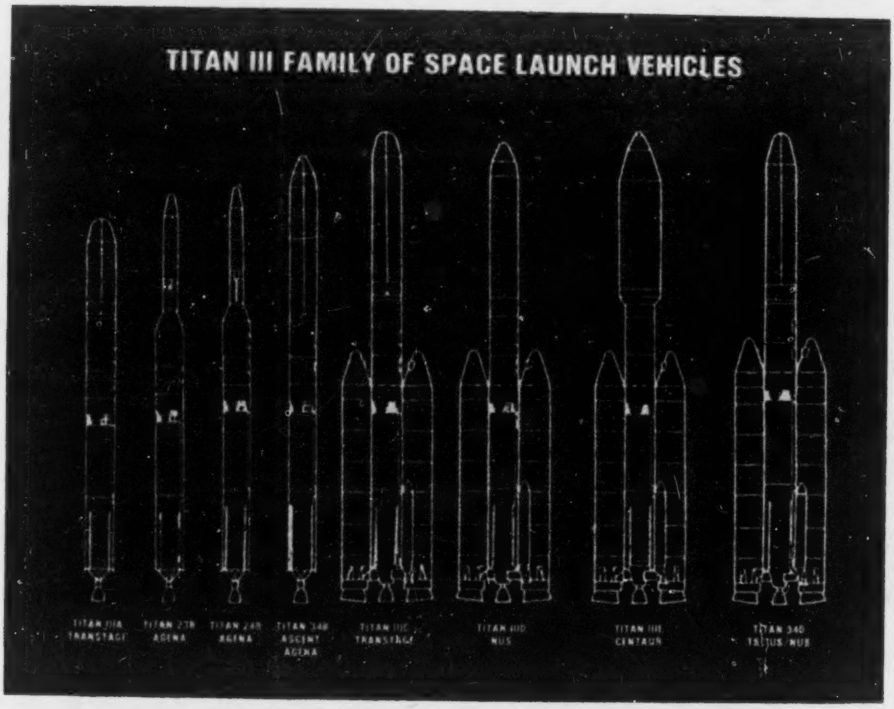
TITAN 34D ACCIDENTS

Mr. **CHAPPELL**. Can you tell us about the experience of the two consecutive accidents with the Titan 34D ELV?

[CLERK'S NOTE.—The Air Force requested, and the Committee agreed, to suppress printing of testimony that could prejudice ongoing investigations of these accidents.]

General **KUTYNA**. If I can throw up a couple quick charts, we might be able to explain that a little better.

[Slide follows:]



TITAN III FAMILY OF SPACE LAUNCH VEHICLES

TITAN IIIA TRANSTAGE
TITAN 23B AGENA
TITAN 24B AGENA
TITAN 34B ASCENT AGENA
TITAN IIIC TRANSTAGE
TITAN IIID NUS
TITAN IIIE CENTAUR
TITAN 34D IUS/NUS

General **KUTYNA**. This is the family of Titan launch vehicles. Just to give you a background, we have launched more than 300 of these. The one that failed is the one on the far right, and we have purchased 16 of those. We flew seven of those successfully until the 28th of August last year, and of course lost the last two.

Prior to that, the track record has been very impressive.

The ones next to the one on the right, the Titan IIIE, we launched seven, all were successes. Titan IIID's, we launched 22, and they were all successful.

The next one over, Titan IIIC we launched 31 and 30 were successful. So we have a very high success rate, about 98.5% for over 130 Titan IIIs launched.

So it is a disappointment and surprise to lose these two.

Mr. **CHAPPELL**. What did you say was the difference?

General **KUTYNA**. Back up one slide.

Mr. **Chappell**. We are talking about the 34D.

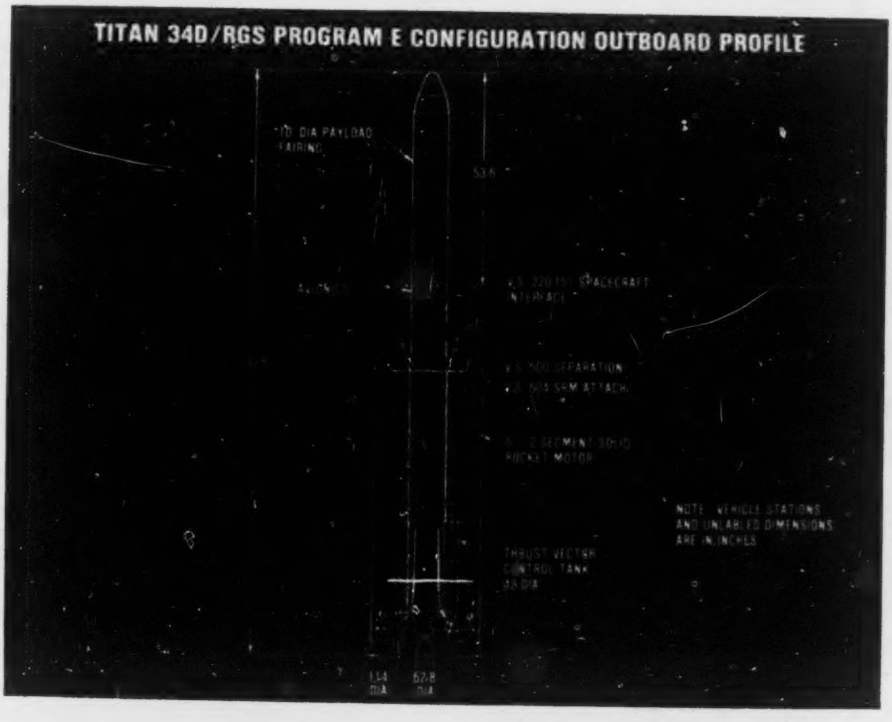
General **Kutyna**. Yes, sir, the 34D; those that you see with the solid rocket boosters on the side are all Titan IIIs. They have as a center section a liquid core which is common to all Titan IIIs. We have launched 130 of those cores. Then you strap the boosters on. The first shown on the left with the boosters is a Titan IIIC. We have launched 31 of those with one failure.

The next is the Titan IIID. We have launched 22 of those all successfully. The next one is the IIIE and that had a Centaur on top, a much larger upper stage. All seven of those worked. The 34D has one half stage of solid more. Normally there are five segments in each of those; the 34D has five and a half, so we extended the solid one-half segment. That is the only change to that vehicle. We fired seven of them and the next two didn't work.

Mr. **Young**. Did both have the extra half segment?

General **Kutyna**. Yes.

[Slide follows:]



TITAN 34D/RGS PROGRAM E CONFIGURATION OUTBOARD PROFILE

10' DIA PAYLOAD FAIRING
53.6'
AVIONICS
V.S. 220.151 SPACECRAFT INTERFACE
V.S. 500 SEPARATION
V.S. 504 SRM ATTACH
5 1/2 SEGMENT SOLID ROCKET MOTOR
NOTE: VEHICLE STATIONS AND UNLABLED DIMENSIONS ARE IN INCHES
THRUST VECTOR CONTROL TANK 33 DIA
114 DIA
62.8 DIA

General **Kutyna**. Now, regarding the first one, I can show you why that didn't work. This is what the vehicle looks like. The center stage is liquid, and if you see the dotted lines at the bottom, that is the fuel tank. Above that, the next set of dotted lines is the oxidizer tank. Now, at bottom and liquid engines, the bell housing in the middle, and maybe I better get up to the board here to show that.

These are liquid engines here. Unlike the Shuttle, these do not light at lift off; they light at 134,000 feet altitude, only these two here. On the Shuttle, everything lights at lift off.

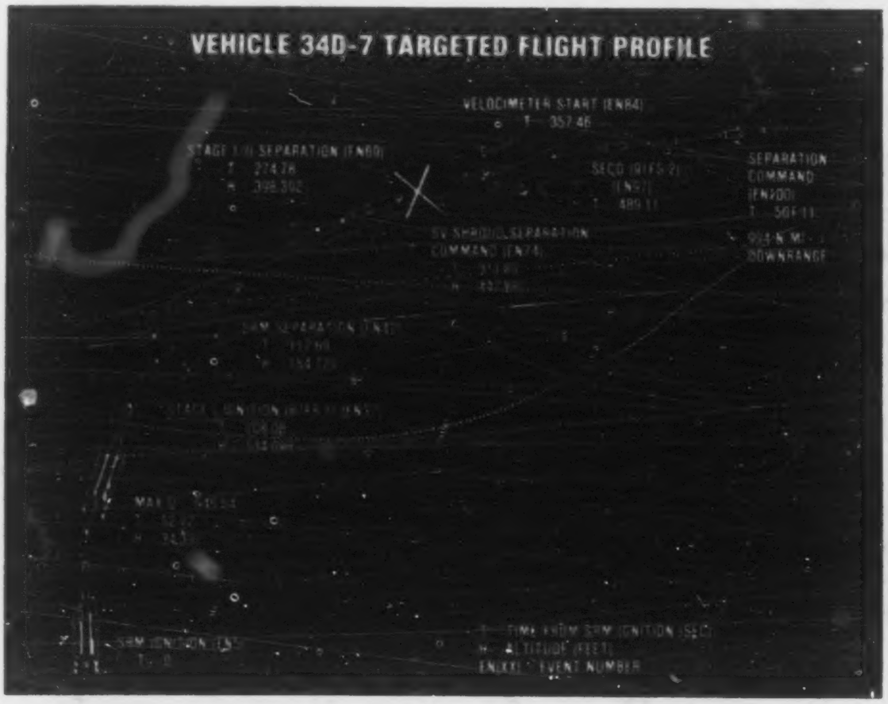
These two lit off and they worked perfectly. We got to altitude and as this lit at about 108 seconds into the mission (this addresses the previous accident, not the current one) we experienced an oxidizer leak, a leak from this tank, but it occurred in a line down in this area.

[CLERK'S NOTE.—Testimony concerning the on-going investigation of the Titan 34D accidents removed.]

Mr. CHAPPELL. You never had any ignition on that one?

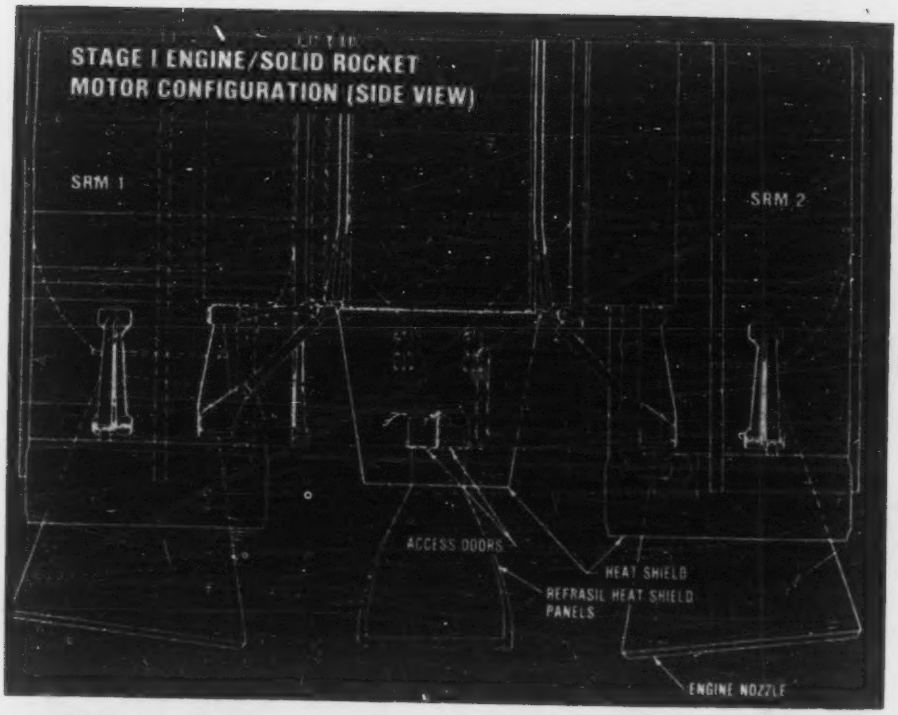
General KUTYNA. The way it starts is the two fluids come together. You don't need an igniter; as soon as they touch, they ignite themselves.

[Slides follow:]



VEHICLE 34D-7 TARGETED FLIGHT PROFILE

VELOCIMETER START (EN84)
T = 357.46
STAGE I/II SEPARATION (EN60)
T = 274.78
H = 398,302
SECO (91FS-2)
(EN97)
T = 489.11
SEPARATION
COMMAND
(EN200)
SV SHROUD SEPARATION
COMMAND (EN74)
DOWNRANGE
SRM SEPARATION
MAX Q
SRM IGNITION (EN5)
T = 0
T = TIME FROM SRM IGNITION (SEC)
H = ALTITUDE (FEET)
EN(XX) = EVENT NUMBER


STAGE I ENGINE/SOLID ROCKET
MOTOR CONFIGURATION (SIDE VIEW)
SRM 1
SRM 2
ACCESS DOORS
HEAT SHIELD
REFRASIL HEAT SHIELD PANELS
ENGINE NOZZLE

General **Kutyna**. The reason I show this is I want to show you last week's accident, is not in the same area.

Here is the bottom view of the vehicle. These are two solids, one here and there. Here is the liquid stage and right in this area are all the high pressure pumps that take the fuel and oxidizer from the tanks and pumps them into the two engines. On this chart one in shown in back of the other.

Right there is where our failure occurred. Right in that particular area on the solid booster rocket.

On this vehicle, the failures occurred up here, the one we just lost.

Mr. **Miller**. On the engines, do you gimbal those engines?

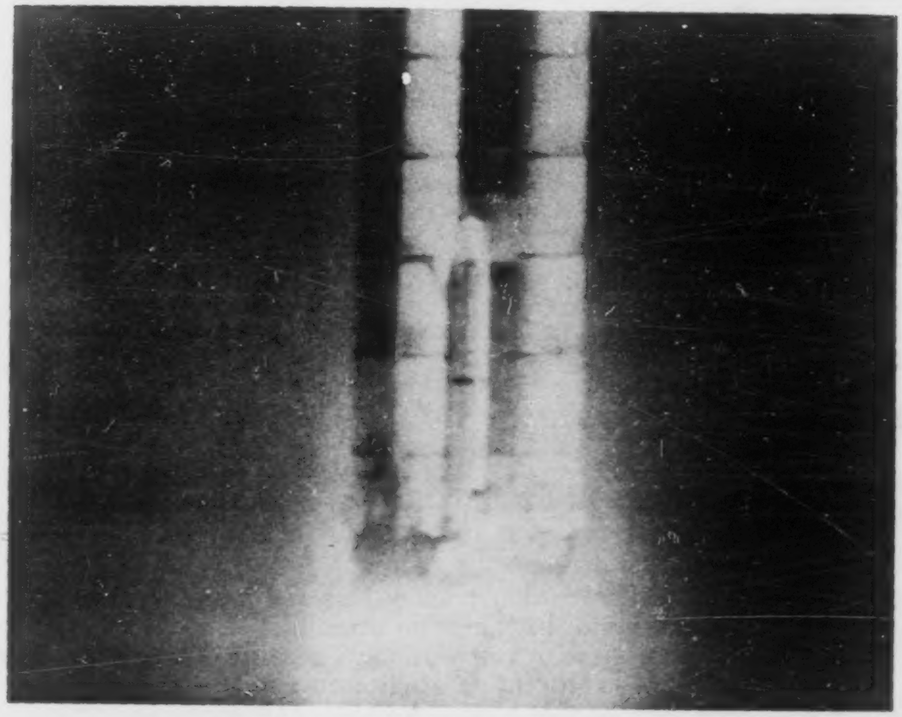
General **Kutyna**. Yes, sir, they are. They are gimballed. These move around. These do not. They inject fluid into the engines; that changes the flow; and affects the direction of the thrust vector which is the same as gimballing the liquid engine. But these are gimballed at that time, yes.

Here is the vehicle. My problem occurred in this area last August. The best we know on this latest failure is that it occurred on a solid right booster about in this area. The photographs that we have were taken at 40 frames per second at eight-and-a-half seconds after liftoff which is when the problem started. In one frame the vehicle is beautiful, no problem whatsoever. The next frame at 40 frames per second, that quick, you see a light puff of smoke almost like on the shuttle.

[CLERK'S NOTE.—Discussion concerning the on-going accident investigation removed.]

General KUTYNA. This is a picture of the one we lost last August but I want to show you regarding the latest failure, here is the liquid engine area and this is where the booster failed at eight-and-a-half seconds.

[Slide follows:]



General KUTYNA. At one frame, they got a little smoke, a little flash there, the next frame a very large burning area on that solid booster, and the third frame the vehicle was gone. The third frame—it was that quick. Three frames at 40 frames a second and it was gone in three frames.

At this point, it does not look like it emanates from the seal as it did in the Shuttle accident.

It looks like it is coming in the middle of that side. They think possibly there is a charring, a little blackening on the frame as if something were burning from the inside out and, it just went like that.

The vehicle worked perfectly until that point.

Mr. CHAPPELL. This is not an O-ring problem, as suggested in the Shuttle.

General KUTYNA. It doesn't appear to be because it looks like it is coming from the center of the solid rather than one of these seams. It is yet to be determined.

The accident team is just in place today looking at it. So I don't want to speculate.

Mr. McDADE. Were there any weather abnormalities?

General KUTYNA. Not at all. The weather was great. Instruments, chamber pressures in the solid, they were perfect up to that point. There was no increase in chamber pressure.

Mr. CHAPPELL. Will these accidents affect the recommendations that the Administration will make in light of the Space Shuttle tragedy?

General KUTYNA. I would not think so, sir. I think they would just enforce the recommendation that we are formulating at this time for our follow-on vehicles and complementary vehicles.

Mr. CHAPPELL. What about the 1988 initial CELV launch?

General KUTYNA. I think that launch will proceed on schedule unless we find some generic failure in this one.

If there is something generic that might delay the 1988 launch—with the number of launches we have had of these solids, we have over 50 or 60 launches of Titans with these particular solids that have been successful. I don't think there is a generic problem. It has got to be something else.

Mr. CHAPPELL. Mr. McDade.

CELV SUPPLEMENTAL

Mr. McDADE. Thank you very much, Mr. Chairman.

Let's talk a little about the expected supplemental for both NASA and the Air Force to compensate for the tragic loss of the Space Shuttle Challenger.

The committee understands that the Air Force portion of the supplemental will center on two key initiatives: A, purchase of 13 additional Complementary Expendable Launch Vehicles (CELVs) beyond the 10 vehicles implicit in the fiscal year 1987 budget—a total of 23 CELVs—which are for boosting heavy, shuttle class payloads into space; and, B, initiation of a competition to build 12 new expendable launch vehicles which are for medium-weight payloads.

Is that essentially what we are talking about?

General KUTYNA. That is the way it looks at this time, yes, sir.

Mr. McDADE. Are you going to be required to offset the supplemental using excess DoD funds?

General KUTYNA. We are looking at offsets at this time, DoD offsets in 1986 and 1987.

Mr. McDADE. Any thought given to the Air Force using funds from programs appropriated but not authorized by Congress last year?

General KUTYNA. I am not aware of that, sir.

NEED FOR REPROGRAMMING

Mr. McDADE. According to the Air Force multiyear justification materials submitted to the committee, Congress has provided $465 million for a 10 CELV program through fiscal year 1986.

If that is the case, why do you need a reprogramming, General?

General KUTYNA. To keep the multiyear alive. I am on an incrementally funded contract now, similar to multiyear, and in anticipation of multiyear and your direction not to perturb the contractors, we have gone with that contract.

I can't spend any more money on that contract because I have normal procurement funds, not advance procurement. I need advance procurement. The alternative is to restructure in midstream, causing the program delay and a lot of perturbation of the contractors.

Mr. McDade. Is that the reason for the April 30th date?

General Kutyna. Yes, sir.

Mr. McDade. What about the option of reprogramming some of the money but not all of it until we get a supplemental? Can that work?

General Kutyna. I haven't examined the implications of that option. I don't know when the supplemental will come, sir, and right now we are very tight on that money.

The program has been kind of going on a wing and a prayer for quite a while, so the schedule has been compressed to where there is no pad in the schedule right now. So I think we need that money prior to the supplemental, sir.

Mr. McDade. You are pretty confident that you are not going to discover any kind of generic difficulty?

General Kutyna. I don't think so.

Mr. McDade. Could you have a provision in the contract in the event that you subsequently discover something?

General Kutyna. We have to fix it if there is a generic problem and the government would share in the cost of fixing that.

The contractor would also.

Mr. McDade. Thank you, Mr. Chairman.

Mr. Chappell. Mr. Young.

Solid Booster Manufacturer

Mr. Young. General, along that same line, is it possible that the shelf life age of certain components could be a possible problem since we are dealing with basically the same type of solid booster here, both these Titan failures plus the shuttle?

General Kutyna. I think design was a problem on the shuttle, not age. These solids, every component on this vehicle has a certain shelf life and they adhere to that very rigorously. So these are new solids, not something that has been sitting around for 20 years.

[Clerk's note.—Testimony concerning the on-going accident investigation removed.]

Mr. Young. Who makes the solid booster we are talking about here?

General Kutyna. CSD, a division of United Technologies in California.

Mr. Young. That is not the same company that made the solid booster for the shuttle?

General Kutyna. The shuttle one is Thiokol in Utah. Similar boosters; the joints are a little different, but the technology behind the boosters is very similar.

[Clerk's note.—Discussion concerning the on-going accident investigation removed.]

NEWS MEDIA COVERAGE OF LAUNCHES

Mr. YOUNG. I understand that one of the TV networks actually had film of the launch. It is my understanding that the launch time was supposedly not published.

General KUTYNA. The launch time is not supposed to be published, nor the date.

Bobby, you have been around there. Is there any way the stuff leaks out?

This is John Mansur, sir.

Col. MANSUR. I was the launch director at Cape Canaveral for three-and-a-half years.

It is awfully hard to keep something like that from being spotted by a launch watcher and you get newspaper reporters that are dedicated launch watchers. They learn that on X number of days before launch, you do certain things. And as a booster is too big to hide, if you really work at it and watch close, you can narrow it down to a day or two of launching, and then the reporters camp out and just watch. I expect that is what happened with this.

There are indicators that you just can't hide. We worked at it at the Cape by doing such things as we would periodically go through the motions as if we were going to launch when we weren't, just a little bit of misinformation periodically to make it more difficult. But it is awfully hard to hide a 120-foot high booster that you are doing things with, so it is hard to keep people from knowing when you are going to launch.

General KUTYNA. As I recall, the tower rolls back an hour before launch and that is visible.

IMPACT OF CHALLENGER ACCIDENT

Mr. YOUNG. Challenger put our launch of military and intelligence payloads behind considerably. What will these two Titan mishaps do to that schedule?

General KUTYNA. If it is resolved fairly quickly, in less than a year, it will add possibly one or two payloads to the backlog.

If we are generically grounded for longer than that, it will start piling up.

We are running ———.

Mr. YOUNG. The launch that you showed on the screen there was actually in flight?

General KUTYNA. Yes, sir.

Mr. YOUNG. When you destroyed it. Was the other one in flight as well or on the pad?

General KUTYNA. The one in August at 134,000 feet, 110 seconds into flight, and we destroyed it 100 seconds beyond that, so well out.

This anomaly occurred at eight-and-a-half seconds and it self-destructed in two ways. First of all, you had the explosion and the solid is connected to the main body attach points, and as a precaution, if those attach points are broken for any reason, the vehicle initiates its own self-destructing system.

So in this one, at eight-and-a-half seconds, apparently that solid disintegrated itself and the attach point broke at the top and at that point, the destruct system fired, and that is when you saw the big fireball.

DAMAGE TO LAUNCH PAD

Mr. YOUNG. Was there any damage to the main launching facility?

General KUTYNA. Yes, sir. The main pad was damaged somewhat. We lost a building near the pad. The umbilical cords and tower were not hurt.

There is a pad to the west of that, and that pad, apparently got some burning fuel on it and we lost an elevator.

Estimates are four to eight months at this preliminary stage on how long it will take to get the pads rolling again.

Mr. YOUNG. Chances are the pad will be back in operation before you are prepared to fly again?

General KUTYNA. It depends on what we find with the booster. If it is very obvious it could be fairly quickly.

We have a bird on the east coast stacked for launch. It could go quickly if it is something that we could solve.

Mr. YOUNG. Thank you very much, General.

Thank you Mr. Chairman.

Mr. CHAPPELL. Mr. Miller.

CELV PAYLOADS

Mr. MILLER. Thank you, Mr. Chairman.

I hear you saying, General, that we could get behind on the payloads because of the accidents that we have had. Could you give us a little rundown as to what those payloads are and why it is necessary to have them up now?

What if we were 12 months behind? Are we in a race on this payload item? In short, what are the payloads and what can you tell us about them?

General KUTYNA. We are at the secret level in this session?

Mr. CHAPPELL. Top secret.

General KUTYNA. At the top secret level, I can talk about somethings. Others, I cannot. At the secret level, the next bird we need to launch is a ——— satellite. At that level, the ———.

We have a constellation of those on orbit with definite lifetimes, about ——— and it is about time to launch the next one, so when one dies on orbit, we have one up there. That is the one on the pad ready to launch.

Should we have a failure on orbit inadvertently or a lifetime failure, we have to get the bird up; otherwise, we ———. So that is extremely important.

For the highly classified launches, yes, they are items that we are short of now. We need to get them up there.

We have constellations of communication satellites up there that are fairly healthy now, so we could afford a little more delay in those communication satellites unless we have failures.

But the ———.

Mr. MILLER. How about the communication satellites that we put up for the private communication people? Do we have a schedule in the contract to put certain satellites up at certain times?

General **Kutyna**. We at DoD do not. However, NASA has on the Shuttle. Those satellites are up there to provide a service to customers and they cost a considerable amount. If they sit idle, they are not reaping a certain profit, so the commercial customers are anxious to get the birds up also.

Mr. **Miller**. If we do not get the customers' birds up there, do we pay a penalty?

General **Kutyna**. No. NASA does not pay the penalty. However, you do pay the penalty in the long run in that that customer will go somewhere else.

Mr. **Miller**. You are talking about another——

General **Kutyna**. Arianne, of course, is a very strong competitor to us. The Chinese and the Russians are offering commercial launches at this time; the Japanese also. So we will lose that business for the United States.

Mr. **Miller**. How do they compare with us when it comes to accidents?

General **Kutyna**. I think the Arianne is probably about the same. They have had their infant mortality. The system is new and so they are suffering a higher rate now then we did on our Titans, for example, and our commercial vehicles, so I think they are comparable. They have a very good rocket.

Mr. **Miller**. They have a good rocket, but they have also had accidents?

General **Kutyna**. Yes, sir. They have had losses and I don't know how many in the recent years, but I would not consider it to be anything worse than you would expect at that stage of their program.

Mr. **Miller**. Perhaps you could tell us the number of accidents.

General **Kutyna**. We will supply that for the record.

Mr. **Miller**. For the record, if you would, please, to give us something to compare to.

General **Kutyna**. It is not our turf, but we will get that.

Mr. **Miller**. Thank you.

[The information follows:]

The 31 May 1986 failure of the Arianne-2 was the fourth in 18 launches and the third consecutive failure caused by a third stage anomaly. The other failures of the third stage were on the fifth flight on 10 September 1982 and on the fifteenth flight on 12 September 1985.

Mr. **Chappell**. Mr. Livingston.

SOVIET THREAT

Mr. **Livingston**. Presumably the Soviets have some analysis of what our capabilities are today and the aging rate of our systems, what with all the spy cases that have come to light, and perhaps some that haven't.

Have you all done any risk analyses on what might happen if they were to assess our lack of capacity to observe as a result of the launches that didn't go up over the last year?

General **Kutyna**. I don't doubt that they know exactly what our ability is right now or lack of capacity in space. They probably have a pretty good handle on that. ———.

If the ———, you can take advantage of it.

Mr. **Livingston**. Have you gotten any results from your assessment of whether or not sabotage was involved in this most recent incident?

General **Kutyna**. No, sir.

Mr. **Livingston**. No evidence at all.

The board has just met today.

Mr. **Livingston**. Thank you.

Mr. **Chappell**. General, if we approve this reprogramming today, can we rest assured that there won't be a launch until you are satisfied that everything is safe and secure?

General **Kutyna**. Absolutely, sir. I would like to state just for the record that there were a quarter of a million man hours put in between the last launch and this launch over and above the normal processing to try and make sure that this bird did not malfunction in the areas that we found last time. It didn't. It malfunctioned somewhere else.

I hope to heck we have a better record on the next one.

Mr. **Chappell**. We do, too, General. And we want to tell you how much we appreciate your work.

Mr. McDade?

Contractor Tooling

Mr. **McDade**. This is potentially a $6 billion program with a limited number of people involved, to say the least, and part of the reprogramming request is for $45 million for contractor tooling.

General **Kutyna**. Yes, sir.

Mr. **McDade**. Why isn't this is good spot to do what the Navy is doing, providing that the contractor has to provide tooling or pay for parts?

General **Kutyna**. I am really not familiar with that. I will have to—

Mr. **McDade**. With the Navy policy?

General **Kutyna**. Yes. I will look at that and provide an answer for the record.

Mr. **McDade**. It is an issue that keeps coming around. We would appreciate that.

[The information follows:]

Although the competitively selected prime contractor, Martin Marietta, may be selected for the additional 13 CELV's the Air Force is currently exploring a competitive plan at the subcontract level for the follow-on buy of CELVs. The tooling and non-recurring start-up cost for the CELV program equals $45 million in FY 1986. The Air Force has proposed reprogramming funds to cover this amount in order to avoid having to protect this investment with an unfunded cancellation ceiling (UCC) in the anticipated multiyear contract. If Congress prefers to approve a UCC, we could easily implement this direction. Treatment of the nonrecurring costs in this manner would be identical to the Navy tooling approach. Thus, tooling costs would be paid on a level line basis with contractual protection if the contract were to be terminated or cancelled. The Air Force believes; however, that since funds are available through reprogramming to cover this liability, a funded cancellation ceiling approach is more appropriate for CELV. We will consider the Navy tooling policy for application in future program.

Mr. **Chappell**. General, there will be other questions which we haven't asked that will be put into the record at this point, and we would like you to respond.

[Clerk's note.—Questions submitted by Mr. Chappell and the answers thereto follow:]

TITAN 34D EXPENDABLE LAUNCH VEHICLE ACCIDENTS

Question. The Air Force has recently experienced two consecutive accidents with Titan 34D expendable launch vehicles. The most recent accident occurred last Friday. Beside the concerns this raises on safety and the incurred financial losses, these accidents are relevant to the Air Force's proposal to pursue procurement of Complementary Expendable Launch Vehicle which are variants of Titan 34D missiles. (CELV is a Titan 34D7). General Kutyna, does the Air Force have any finding about the cause of the Titan 34D missile accidents? When are they expected to be known?

Answer. An Air Force mishap board was convened on 22 Apr 86 to investigate the 18 Titan accident. Preliminary evaluation of film and telemetry indicates the failure was limited to a solid rocket booster. However, the Titan accident on 28 Aug 85 was caused by a double failure in the Stage 1 Core vehicle. A substantial oxidizer leak and the loss of a liquid engine turbopump after 200 seconds of flight were the failures. Consequently, the two launch failures appear to be unrelated. We anticipate the board findings will be available not earlier than the end of July 1986.

Question. What delay will this cause on satellite launches currently scheduled for Titan 34D boosters?

Answer. The extent of the delay is dependent on the release of board findings concerning the cause and the time needed to implement correction actions. We launch satellites using the Titan 34D at a rate of approximately three per year. The criticality of the impact of the delay is directly related to the continuing health of our satellites on orbit.

Question. What impact will this have on the development of the Titan 34D7—Complementary Expendable Launch Vehicles?

Answer. At this time the impact is unknown. The Titan 34D Solid Rocket Motors (SRMs) have performed successfully on all 68 previous flights which includes the successful firing of 739 SRM segments. Since the design of the SRMs used on the CELV is a growth version of the Titan 34D SRM design, it is highly unlikely that the failure was a design flaw. Preliminary findings indicate this failure appears to be an isolated incident and should not affect the CELV program. Although not anticipated, if the failure mode were a "generic" problem with the Titan family of launch vehicles, any deficiency redesign would also have to be made to the CELV.

STATUS OF THE SUPPLEMENTAL

Question. What is the status of the supplemental, and when do you think the Congress will receive it?

Answer. The FY 86 Supplemental has completed OSD Staffing and is is currently in review at the National Security Council (NSC). The NSC is scheduled to meet in May to review the Space Launch Recovery Plan. If approved, the package should be forwarded to Congress by the end of May.

EFFECT OF REPROGRAMMING ON MULTIYEAR STRATEGY

Question. The Congress last year suggested that the Air Force propose a multiyear approach to the CELV acquisition. We understand that the Air Force agrees and has requested multiyear approval in Fiscal Year 1987 in its current budget. If Congress approves the Fiscal Year 1986 reprogramming, won't the Air Force in fact be initiating the multiyear contract before Congress has formally approved it as part of the Fiscal Year 1987 authorization and appropriation process?

Answer. No. The objective of the FY 1986 reprogramming is to protect the implementation of multiyear procurement in FY 1987 should Congress elect to formally approve it as part of the Fiscal Year 1987 authorization and appropriations process. Use of FY 1986 funding as expanded advance procurement allows purchase of long lead materials and piece parts needed for those times where economic order quantity, minimum production rates, etc. make prudent procurement sense. This approach to grant the Air Force expanded advance procurement authority was previoulsy used successfully on the DSCS and B-1 programs and it did not represent multiyear approval by Congress.

Question. How would you use Fiscal Year 1986 CELV funds if Congress approved the reprogramming in Fiscal Year 1986, but for some reason did not approve the Fiscal Year 1987 multiyear initiative?

Answer. If Congress approves the FY 1986 reprogramming, the funds would be used as shown below.

CELV ADVANCE PROCUREMENT—FY 1986 REQUIREMENT ($120 MILLION)

FY 1987 Buy ($40 Million)
    Long-lead forgings for solid rocket cases, liquid engine domes & injectors, skin material for core tanks & payload fairings
    Piece parts for avionics (relays, transmitters, transducers) and EMVs, gyros, accelerometers
    Start fabrication on liquid engines, SRM cases, core tanks, buildup avionics boards
FY 1988 Buy ($45 Million)
    Long-lead
    Piece Parts
FY 1989 Buy ($15 Million)
    Long-lead
    Piece Parts
FY 1990 Buy ($10 Million)
    Piece Parts
FY 1991 Buy ($10 Million)
    Piece Parts

If for some reason Congress did not approve the FY 1987 multiyear initiative, $65 Million would be used for the advance procurement of long-lead materials and piece parts for one fully funded CELV in FY 1987. The balance of the FY 1986 funding would be used to offset the costs associated with renegotiating agreements at the primed and subcontract levels which had been previously based on a ten unit buy.

Disapproval of the FY 1987 multiyear initiative would also result in up to a six month delay in delivery of the second and subsequent fully funded launch vehicles to the Cape.

COMBINED MULTIYEAR

Question. The Air Force is requesting reprogramming to initiate immediate multiyear acquisition of 10 CELVs. Shortly, the Air Force will be requesting a supplemental for 13 additional CELVs. The total 23 vehicle program may cost over $6 billion. General Kutyna, what is the point of pursuing two separate CELV actions—10 now and 13 later?

Answer. We are committed to maintaining the Initial Launch Capabililty (ILC) of Oct 88 for the initial buy of ten boosters. We have not committed to any specific procurement plan for the additional 13. We are currently evaluating the best contractual approach to acquiring the follow-on buy of 13 CELVs. However, in order to maintain our required initial launch capability in Oct 1988, we must not perturb the current contract to the extent it would delay us.

Question. Would it not be more prudent to approve your fiscal year 1986 reprogramming only to the extent needed to keep the program moving until the supplemental is approved, at which time you could pursue a single, integrated multiyear contract for all 23 vehicles?

Answer. No. The entire FY 1986 reprogramming is needed to allow smooth transition to a multiyear in FY 1987 for the current buy of 10 CELV launch vehicles. We are currently evaluating the best contractual approach to acquiring the follow-on buy of 13 CELVs which may be an expansion of the current contractual effort.

Question. Will the second set of 13 CELVs, which may cost over $3 billion, be given sole source to the same contractor which will build the first 10 CELVs? Since the Air Force has more than doubled the original quantity, is there any way to obtain competition for either the whole 23 vehicle program or the second increment of 13 vehicles?

Answer. Yes. The Martin Marietta Titan 34D7 wa competitively selected as the builder of the CELV. We are currently exploring a competitive plan at the subcontract level for the follow-on buy of CELVs, but not at the expense of impacting the rapid buildup of launch capability required to meet the Space Launch Recovery mission model.

Question. Describe for the record in detail the features of the proposed CELV multiyear contract, milestones, and how the Air Force expects to obtain reasonable prices if the Congress approves a quantity increase from 10 to 23 vehicles.

Answer. The features of the proposed CELV multiyear contract are the same as the current incrementally funded contract with the exception that the launch vehicles are fully funded in FY 1987 through FY 1991 as follows: 1, 3, 2, 2, 2. The contract milestones are:

Multiyear Contract Award	Oct 86
Full Scale Solid Rocket Motor Static Firing	May 87

Payload Fairing Separation Test	Sep 87
Critical End Item Delivery to Cape	Jan 88
First Article Test Start	Mar 88
First Article Test Complete	Jul 88
Initial Launch Capability (ILC)	Oct 88

If Congress approves a quantity increase from 10 to 23 vehicles, a follow-on proposal will be submitted to validate the cost estimates contained in the FY 1986 Supplemental.

Question. Please provide the features of the multiyear contract, including such details as incentive structure, contract structure (firm fixed price or other), etc.

Answer. The proposed multiyear procurement of ten CELVs is a Fixed Price Incentive Fee contract with a total ceiling price of 120 percent, profit of 10 percent and a share ratio of 90/10. Incentives are based on schedule and mission success. A total of $100 million incentives could be awarded for reaching an ILC up to 200 days earlier than Oct 88 and for successful completion of ten launches. At risk is up to $300 million for mission failure or unsatisfactory schedule performance. A similar incentive program will be negotiated for the additional buy of 13 CELVs.

Question. Provide for the record the launch rate per year for a 23 CELV program.

Answer. The launch rate for the proposed 23 CELV program is as follows: ———.

COST OF 10 CELV PROGRAM

Question. Last year Air Force Secretary Aldridge testified to the Committee that "I believe the cost number of about $2.1 billion which is the then year costs projected for the CELV program is relatively accurate, probably more accurate than many other DOD programs that have come before the Committee. I feel fairly confident we can bring in the program at the cost." General Kutyna, please explain why Air Force multiyear justification material shows the 10 vehicle CELV acquisition program to cost $3.0 billion rather than the $2.1 billion to which your Secretary testified a year ago.

Answer. The $2.1 billion was the CELV initial contract cost for 10 Titans and 10 Centaurs, which has changed very little. The total program cost of $2.9 billion includes other government costs such as range support, incentives and program support, as well as, the fact-of-life changes due to deferring Centaur development and production approximately 18 months. The CELV contract cost has always been stated as $2.1 billion. In April 1985, the Air Force testified before the HAC and provided for the record an estimate of other government costs (i.e., change orders, system support, propellants, etc.) which are additive to the contract cost. Furthermore, in July 1985, we provided a report to the Congress that discussed revised cost estimates to the initial contract value as a result of deferring the Centaur effort 18 months.

Question. What has caused a $900 million, or 43 percent, cost growth in one year's time?

Answer. The $2.1 billion was the CELV initial contract cost for 10 Titans and 10 Centaurs, which has changed very little. The total program cost of $2.987 billion includes other government costs such as range support, incentives and program support, as well as, the fact-of-life changes due to deferring Centaur development and production approximately 18 months. The CELV contract cost has always been stated as $2.1 billion. In April 1985, the Air Force testified before the HAC and provided, for the record, an estimate of other government costs (i.e., change orders, system support, propellants, etc.) which are additive to the contract cost. Furthermore, in July 1985, we provided a report to the Congress that disussed revised cost estimates to the initial contract value as a result of deferring the Centaur effort 18 months.

Question. Break out all costs (both contract and other government costs) which make up the current $2.9B total for CELV. Show what these costs were last year and describe and explain any cost growth.

Answer. The total program cost for CELV is $2.987 billion. A breakout of contract and government costs is as follows:

		CELV
Initial Contract		$2.096
RDT&E	0.432	
Procurement	1.147	
Operations & Maintenance	0.517	
Contract Revisions		0.252
Defer Centaur	0.077	
Payload Integration	0.073	
IUS Integration	0.044	
Multiyear Restructure	0.058	
Government Costs		0.639
Propellants	0.036	
Program Support	0.044	
Change Orders	0.130	
Incentives	0.100	
Budget To Ceiling	0.171	
Aerospace Ground Equipment	0.090	
Range Support	0.068	
Total Program		$2.987

The FY 86 President's Budget request included the government costs as well as the cost impacts due to Centaur deferral and upper stage and payload integration.

Question. What CELV costs are now known by the Air Force which were not known a year ago?

Answer. In representing CELV costs, the $2.1 billion contract costs were the numbers consistently used. This was done to normalize an equitable Shuttle derived launch vehicle/CELV comparison. Consequently, all common costs, with the exception of Centaur were excluded. Of the mutual Shuttle derived launch vehicle/CELV costs, specific satellite integration and Centaur rephase costs would have been common to either vehicle selected and therefore were not included. The current delay and cost growth in the Centaur program to provide the safety factors required by the Shuttle was not anticipated at the time of the estimates.

Question. What are the specific dalays and cost growth in the Centaur program?

Answer. An account of the specific delays and the scope of the cost growth encountered on the Shuttle Centaur program should be addressed by NASA. Since the Air Force is planning to use a Centaur derivative of the NASA design on the CELV, we are monitoring NASA's progress in order to minimize adverse technical or cost impacts to the CELV Centaur development program.

Question. The Air Force claims CELV is a stable multiyear candidate since it has been launching Titan missiles for 25 years (CELV is a Titan 34D7 missile). How could you have so badly underestimated the costs?

Answer. The cost of the Titan missile has not been underestimated. The $2.1 billion was the CELV initial contract cost for 10 Titans and 10 Centaurs, which has changed very little. The total program cost of $2.9 billion includes other government costs such as range support, incentives and program support, as well as, the fact-of-life changes due to deferring Centaur development and production approximately 18 months.

Question. If the costs were known by the Air Force, why were they not disclosed to the Congress when we specifically asked you a year ago before appropriating over $400 million for this purpose in Fiscal Year 1986?

Answer. All costs known by the Air Force were disclosed to the Congress. The CELV contract cost has always been stated as $2.1 billion. In April 1985, the Air Force testified before to the HAC and provided for the record an estimate of other government costs (i.e., change orders, system support, propellants, etc.) which are additive to the contract cost. Furthermore, in July 1985, we provided a report to the Congress that discussed revised cost estimates to the initial contract value as a result of deferring the Centaur effort 18 months.

Question. Was the Air Force hiding CELV costs from the Congress in order to make the CELV look more financially attractive than the Space Shuttle?

Answer. No, the Air Force was not hiding any CELV costs from the Congress. The CELV cost elements provided to the Congress correlate to similar costs elements for the Space Shuttle. The CELV contract cost has always been stated as $2.1 billion. In April 1985, the Air Force testified before the HAC and provided for the record an estimate of other governments costs (i.e., change orders, system support propellants etc.) which are additive to the contract cost. Furthermore, in July 1985, we provided a report to the Congress that discussed revised cost estimates to the intitial contract value as a result of deferring the Centaur effort 18 months.

Question. Provide for the record by Fiscal Year, appropriation and line item: total estimated CELV program costs as reflected in the Fiscal Year 1986 budget to Congress, the total program costs in Fiscal Year 1987 budget to Congress, the original (incrementally funded) contract costs, and the currently estimated contract costs. Explain significant differences between the total program costs in the two Congressional budget submissions. Also, relate the currently estimated contract funding to the current total CELV program budget by appropriation and explain requirements for noncontract costs, such as change orders and management reserves, in detail.

Answer. The total estimated CELV program costs as reflected in the FY 1986 and the FY 1987 President's Budgets submitted to Congress are shown below. All costs are in then year dollars and include funding in the Space Boosters, Space Launch Support and classified program lines.

CELV TOTAL PROGRAM COSTS

FY 1986 President's Budget [Dollars in millions]

	FY85	FY86	FY87	FY88	FY89	FY90	FY91	TO COMP	Total
3600	$35	$186	$155	$46	$25				$447
3020		153	281	379	497	385	226	84	2005
3400							103	220	323
Total	35	339	436	425	522	385	329	304	2775

CELV TOTAL PROGRAM COSTS

FY 1986 President's Budget [Dollars in millions]

	FY85	FY86	FY87	FY88	FY89	FY90	FY91	TO COMP	Total
3600	$35	$200	$118	$90	$38	$25	$25		$531
3020	45	185	410	514	316	241	161	44	1916
3400					102	120	129	189	540
Total	80	385	528	604	456	386	315	233	2987

The differences between the total program costs in the two Congressional budget submissions are a result of several major adjustments to the acquisition strategy of the CELV and refinement and rephasing of funding profiles. The significant differences include:

(1) Correction of double funding of three boosters by Space Boosters and the classified user in the FY 1986 budget.

(2) Deferral of Centaur development and production 18 months.

(3) Funds for IUS integration and procurement of 3 sets of IUS interface hardware.

(4) Funds for booster/payload integration.

(5) Overall refinement of estimates based upon proposal data.

(6) Redistribution of funds between Space Boosters, Space Launch Support and classified user programs.

The original (incrementally funded) contract cost and the currently estimated contract cost are compared below. All costs are in then year dollars and contain funds within the Space Boosters, Space Launch Support and classified user program lines.

ORIGINAL CONTRACT

[Dollars in millions]

	FY85	FY86	FY87	FY88	FY89	FY90	FY91	TO COMP	Total
3600	$35	$249	$116	$30	$2				$432
3020		232	297	309	153	83	45	28	1147
3400					115	144	125	133	517
Total	35	481	413	339	270	227	170	161	2096

CURRENT MULTIYEAR CONTRACT ESTIMATE

[Dollars in millions]

	FY85	FY86	FY87	FY88	FY89	FY90	FY91	TO COMP	Total
3600	$35	$200	$118	$90	$38	$25	$25		$531
3020	45	168	344	400	222	116	50		1345
3400					80	98	105	189	472
Total	80	368	462	490	340	239	180	189	2348

The differences in the currently estimated multiyear contract cost and the total program costs submitted in the FY 1987 President's Budget are attributed to refinements in launch services and other government costs as itemized below:

Appropriation	*Item*
3020:	
Propellants	($36)
Program Support	(44)
Change Orders	(130)
Incentives	(100)
Budget to ceiling	(171)
Aerospace Ground Equipment	(90)
3400:	
Range Support	(68)

Question. Provide for the record a detailed list of tasks to be accomplished under the CELV contract, and their associated estimated cost. Segregate by fiscal year, appropriation, and line item to the extent possible.

Answer. The tasks to be accomplished under the CELV multiyear contract and their associated estimated costs are summarized below. The estimates for the tasks do not reflect individual contractual values or limitations. Rather, the limitation is placed on the prime contractor's total contract price. All costs are in millions of then year dollars.

DEVELOPMENT (3600)

[Dollars in millions]

Task	FY 1985	FY 1986	FY 1987	Total
Payload Fairing	$2	$26	$10	$41
Solid Rocket Motor	2	36	3	41
Core Vehicle	25	98	23	149
Launch Facilities		26	23	52
Avionics	6	12	3	21
Centaur			35	154
Payload Integration		2	21	73
Total Contract	35	200	118	531

PROCUREMENT (3020)

[Dollars in millions]

Task	FY 1985	FY 1986	FY 1987	Total
Quantity			1	10
Advance Procurement:				
Current Year		$120	180	540

PROCUREMENT (3020)—Continued

[Dollars in millions]

Task	FY 1985	FY 1986	FY 1987	Total
Prior Year (credit)			(40)	(540)
Procurement			80	760
Tooling	$45			45
User		48	124	540
Total Contract	45	168	344	1,345

Question. Provide a paragraph describing each of the line items (fairing, SRM, etc.) shown in your answer.

Answer. A brief description of the development and production tasks is provided as follows:

Payload Fairing—Funds design, development and test (structural and separation) of a tri-sector, 86 ft long and 16.5 ft in diameter payload/Centaur shroud.

Solid Rocket Motor—Funds design, development and test (propellant characterization, cold-flow and two static firings) of the seven segment solid rocket motor.

Core Vehicle—Funds design, development and test of stretched Stage I and Stage II Titan 34D core propellant tanks.

Launch Facilities—Funds the modification of Launch Complex 41 to a Titan 34D7 (CELV) Launch vehicle and an Inertial Upper Stage (IUS) or Centaur upper stage configuration.

Avionics—Funds design, development and qualification testing of upgraded core vehicle avionics consisting of the inertial guidance system, the instrumentation system and the command destruct receivers.

Centaur—Funds design, development and test of the Centaur G prime upper stage for the CELV. The primary differences between the CELV Centaur and the Shuttle Centaur are: a) destruct package, b) helium bottles, c) aft and forward adapters compatible with Titan and d) modified avionics.

Payload Integration—Funds integration of three distinct payloads with two booster/upper stage configurations.

Tooling—Funds non-recurring start-up and production tooling.

User—Funds provided by the classified program and Space Launch Support program.

TOOLING

Question. Air Force CELV multiyear justification material claims that the Government will save $19 million in tool design by going multiyear. Air Force further claims that "under a multiyear procurement, the contractor would develop and produce better, more permanent tooling because of the inherent stability of multiyear procurement". What is the basis of the Air Force's estimated cost of $45 million for CELV tooling?

Answer. The tooling cost estimate of $45M is for the refurbishment of Manned Orbiting Lab (MOL) launch vehicle tooling, where practical, and the fabrication of new tooling. Some of the tooling items are for handling fixtures, solid propellant casting mandrels, drilling templates, milling jigs and electrical harness assembly templates.

This tooling is required because the CELV (Titan 34D7) is a growth version of the Titan 34D currently in the inventory. The basic differences in the two configurations are: (1) The CELV 200" diameter payload fairing (vice 120" diameter), (2) The CELV seven segment Solid Rocket Motor (SRM) (vice 5½ segments) and (3) stretched CELV Stage (+8ft) and Stage II (+1.5ft) propellant tanks.

Question. What is the basis of the claimed $19 million tooling savings under multiyear?

Answer. The $19 million tooling savings is a cost avoidance achieved under a multiyear buy. An additional investment to replace worn tooling would have to be made under an annual buy approach. Due to the uncertainties associated with an annual buy, the contractor would be reluctant to invest heavily in high grade, durable tooling.

Question. Describe how the figure of $19M in savings was derived. Is the figure based on an estimate, on contactor proposals, or another method?

Answer. The $19 million tooling savings is based on a SPO estimate.

Question. What were the tooling costs contained in the signed, incrementally funded CELV contract for 10 vehicles that is now in the process of being restructured to comply with normal budgeting procedures (i.e. full funding), and how does this compare to your estimate?

Answer. The tooling cost contained in the incrementally funded contract and the restructured contract are the same. However, a full funding approach requires the tooling costs be budgeted upfront rather than spread over several fiscal years.

Question. For the record, show the proposed CELV tooling and other non-recurring costs by fiscal year, appropriation, and live item. Compare this to the missile procurement exhibits which should already reflect the proposed reprogramming request.

Answer. The non-recurring procurement costs associated with the CELV program are summarized below. The missile procurement P–exhibits which support the FY 1987 President's Budget request were submitted to OSD during formulation of our final reprogramming strategy. Consequently, the P–Series documentation only reflects the FY 1987 reprogramming request.

Task	Appropriation	Millions	FY	Line Item
Tooling	3020	$45	85	047

$19M of the $45M is sourced from Transtage procurement funds in the Space Boosters program, line No. 043.

CENTAUR UPPER STAGES

Question. The Complementary Expendable Launch Vehicle (CELV) will employ a large Titan 34D7 missile to get payloads initially into space, and a Centaur upper stage to boost the payloads from low to high earth orbits. General Kutyna, the Committee understands that originally the 10 CELV program required purchase of 10 Centaur upper stages. However, the Air Force now plans to use 3 Inertial Upper Stages (IUS) that it already has in inventory on the first 3 CELV launches. Is this accurate? How did you find 3 "extra" Inertial Upper Stages? Is it true that you plan to provide these 3 IUS's to the CELV manufacturers—at no cost—as "government furnished equipment"?

Answer. The three IUSs will be used on the first three Defense Support Program (DSP) launches.

The three IUSs were originally manifested on Titan 34D. As a result of a flight anomaly with the IUS-1 in March 1983, the IUS fleet was grounded. The Air Force pursued an emergency procurement of three Transtage upper stages to fulfill launch requirements. Once the IUS program was on track these three IUSs were made available to the CELV program because Centaur development and production were deferred 18 months as a result of the achievable funding profile versus the desired profile. This facilitated the launch of existing DOD spacecraft on an IUS with minimal integration efforts.

The IUSs will not be "provided" to Martin Marietta. The Air Force is responsible for integrating the IUS on the CELV. There is no windfall profit of any nature to be gained by the contractors as a result of these changes. The only result will be the most effective and least costly launch of DOD satellites in light of program constraints imposed.

Question. The Committee understands that although the Air Force now only needs 7 Centaur upper stages to complete the 10 CELV program, it still plans to buy 10 Centaurs on the CELV contract. Is this accurate? What would you do with the 3 "extra" Centaurs?

Answer. Yes. The Air Force still plans to buy 10 Centaurs in order to achieve the best Centaur unit price. Two Centaurs will be used for future DOD missions on the Space Shuttle. The other Centaur will be used to support a classified user requirement.

Question. Does the 10 vehicle CELV program cost data, and specifically the multiyear justification exhibits, contain costs for 7 Centaurs or 10 Centaurs?

Answer. The multiyear justification exhibits contain the cost of 10 Centaurs.

Question: Provide for the record the multiyear justification exhibits for the 10 CELV acquisition program showing the true program cost: i.e. 3 IUSs at no cost (GFE) and procurement of 7 Centaurs. How does this affect the present value analysis?

Answer: True program cost for the 10 CELV acquisition is represented by a 10 Centaur and 10 Titan 34D7 procurement, not 7 Centaur/3 IUS and 10 Titan 34D7. In order to maintain the CELV program within FY 85, FY 86 and FY 87 fiscal constraints and preserve the Initial Launch Capability (ILC), the Centaur development and acquisition was deferred 18 months. Three ELV compatible Inertial Upper Stages that the Government had already purchased were substituted as the upper stage for the initial payload to be launched by CELV. The three Centaurs that will not be used on the 10 Titan 34D7s have all been assigned to specific payloads. Since the Air Force was able to buy 10 Centaurs at a very favorable unit cost, a decision was made to not reduce the quantity from 10 to 7 Centaurs for the multiyear request.

Consequently, the multiyear exhibits and the present value analysis for the 10 CELV acquisition program reflect the costs attributed to the multiyear contract. The cost of the three IUSs are viewed as sunk costs and are not included in the multiyear contract. However, the booster/IUS integration, facility modifications for IUS and the procurement of three sets of interface hardware are included in the analysis.

Question: Why are the 3 Centaurs replaced by IUS upper stages shown under the CELV program instead of under the program which will now be using them (i.e., Space Shuttle Operations, etc.)?

Answer: The three Centaurs replaced by IUS upper stages are shown in the multiyear justification package because the unit price and the savings estimate are based on a buy of ten Centaurs. The space launch recovery plan reassigns the three Centaurs to CELV missions and will be budgeted in Space Shuttle Operations.

The present value analysis shown below is based on the unit price for a buy of ten Centaurs but only includes 7 Centaurs in the analysis.

PRESENT VALUE ANALYSIS COMPLEMENTARY EXPENDABLE LAUNCH VEHICLE

[TY$M]

	FY86	FY87	FY88	FY89	FY90
Annual contract:					
Then-Year	51.2	154.7	241.6	275.0	296.1
Constant (FY86)	51.2	148.6	223.4	245.9	257.2
Present Value	46.5	122.7	167.8	167.9	159.7
	FY91	FY92	FY93	FY94	Total
Annual contract:					
Then-Year	207.9	124.9	87.7	37.9	1,477.0
Constant (FY86)	176.5	103.7	71.2	30.1	1,307.8
Present Value	99.6	53.2	33.2	12.8	863.5
	FY86	FY87	FY88	FY89	FY90
Multiyear contract:					
Then-Year	99.5	222.5	276.6	261.1	177.0
Constant (FY86)	99.5	213.7	255.8	233.4	153.8
Present Value	90.4	176.5	192.1	159.4	95.5
	FY91	FY92	FY93	FY94	Total
Then-Year	82.6	40.5	24.7	10.5	1,195.0
Constant (FY86)	70.1	33.6	20.0	8.3	1,088.4
Present Value	39.6	17.2	9.4	3.5	783.7
	FY86	FY87	FY88	FY89	FY90
Difference:					
Then-Year	−48.3	−67.8	−35.0	13.9	119.1
Constant (FY86)	−48.3	−65.1	−32.4	12.4	103.5

PRESENT VALUE ANALYSIS COMPLEMENTARY EXPENDABLE LAUNCH VEHICLE—Continued

[TY$M]

	FY86	FY87	FY88	FY89	FY90
Present Value	−43.9	−53.8	−24.3	8.5	64.3
	FY91	FY92	FY93	FY94	Total
Difference:					
Then-Year	125.3	84.4	63.0	27.4	282.0
Constant (FY86)	106.4	70.1	51.1	21.7	219.4
Present Value	60.0	35.9	23.9	9.2	79.8

CELV R&D COSTS

Question. Last year, the Air Force testified that $432 million would be required in RDT&E funds for the 10 CELV program. General Kutyna, what is your current estimate of total RDT&E funds needed for the 10 CELV program? How has this changed since last year?

Answer. The current total estimate of RDT&E funds needed for the CELV program is $531M (TY$). This represents an increase of RDT&E funding of $99M required for booster payload integration which was unknown at the time of contract award ($73M) and the 18 month deferral of the Centaur development ($26M).

Question. What R&D tasks need to be done? Provide details for the record and their associated milestones.

Answer. The R&D tasks and the associated milestones are summarized below.

Task	*Start*
Inertial Upper Stage Integration	FY 85
Core Vehicle Design/Test	FY 86
Solid Rocket Motor Design/Test	FY 85
Payload Fairing Design/Test	FY 85
Avionics	FY 85
Facility Modifications	FY 86
Centaur Design/Development	FY 87

All of the tasks (with the exception of the Centaur) must be completed to support an Initial Launch Capability (ILC) of Oct. 88. The Centaur development and its associated facility modifications must be completed to support an ILC of Feb 90.

Question. How concurrent is R&D and production for CELVs?

Answer. The initial CELV R&D and production schedule was structured with an acceptable degree of concurrency. Critical development tasks and hardware qualification tests were scheduled ahead of major production milestones in order to avoid costly changes late in the fabrication cycle.

Question. Describe the concurrency in the program. What development tasks will be accomplished concurrently with production? Describe the risk inherent in each concurrent task.

Answer. The significant development tasks that will be conducted concurrently with production are: Payload Fairing separation tests, core vehicle structural tests and two Solid Rocket Motor static firings. At the same time fabrication will commence on solid rocket motor cases, propellant tank domes, engine injectors and avionics printed circuit boards. The critical tests will be completed prior to assembly of the major components. The solid propellant will not be poured and cured until after the first static firing results are evaluated. The seven segment solids have been static fired four times under the Manned Orbiting Laboratory (MOL) program. Engineering drawings will not be released until after the Critical Design Review in Sept 86. Although the program has some concurrency, the phasing of the key tests has been scheduled to minimize risk.

Question. Why is multiyear procurement, and in particular advance procurement funding Fiscal Year 1986, thought to be necessary when you have two years of R&D work to be done?

Answer. Multiyear procurement is the most prudent acquisition strategy to acquire the CELV at the most economical price ($380 million savings). Advance procurement funding in FY 1986 protects the option to smoothly transition to a multiyear procurement should Congress elect to approve it in the FY 1987 Defense Appropriations Bill.

The RDT&E effort for the Titan launch vehicle is considered low risk. Deferral of the Centaur development by 18 months helps to remove the higher risk effort from the front end of the program.

OPTIMAL CELV BUILD RATE

Question. Last year, the Air Force testified that the optimal, most efficient build rate for CELVs was 2 vehicles the first year, 4 the second, and 4 the third—a total of 10 vehicles. In the supplemental appropriation request, Congress will be asked to expand the program from 10 to 23 CELV vehicles. General Kutyna, is the 10 vehicle CELV multiyear procurement that the Air Force has proposed to Congress in its fiscal year 1987 budget at the optimal build rate?

Answer. Yes. The build rate for the 10 vehicle CELV multiyear procurement was tailored to accommodate several factors such as: budgetary constraints, maintenance of a warm production base, projected launch rate, storage costs, economic order quantities and production capacities of the suppliers of the fix major components of the CELV (i.e., core vehicle, solid motors, liquid engines, payload fairing, guidance set and Centaur).

In the traditional cost effectiveness sense without the above constraints, the optimal build rate for the CELV is approximately six vehicles per year. Beyond six vehicles per year, the substantial capital investment for tooling and facilities offsets the savings from reduced vehicle unit prices.

Question. Why does Air Force budget material show the CELV procurement stretched over five years at the rate 1,2,1,1,2, for the seven non-classified CELV missiles?

Answer. The Air Force budget material reflects a CELV procurement profile of FY 1987 (1), FY 1988 (2), FY 1989 (1), FY 1990 (1) and FY 1991 (2) because the restructure of the incrementally funded program to a multiyear program was fiscally constrained in FY 1986 through FY 1988.

Question. Last year the Air Force testified that the build rate for CELV would be 2-4-4. This year the build rate is 1-3-2-2-2. Please explain how and why the build rate has changed?

Answer. Use of the terms "build rate" and "buy profile" interchangeably is not accurate, therefore some confusion has been introduced when discussing the numerous CELV funding profiles submitted during the past year.

Build rate is different for each major subassembly. It is generally based on a number of factors such as material lead times, hardware complexity and plant capacity. The build rate for the major CELV subassemblies is:

Core vehicles	2,4,4
Solid Rocket Motors	2,2,2,2,2
Liquid Engines	2,4,4
Guidance	3,4,3
Payload Fairing	2,2,2,2,2
Centaur	2,2,2,2,2

Last year, the Air Force testimony implied that the build rate of 2,4,4 was the same as the buy profile. Limited resources in FY 1986 through FY 1988 did not support a full funded annual buy profile of 2,4,4.

Although the build rates for the major subassemblies have not changed, the buy profile, which was driven by fiscal constraints, is now 1,3,2,2,2.

Question. General Kutyna, if your 10 vehicle CELV program is at the optimal build rate, how could the CELV program be expanded to 23 vehicles in the near term?

Answer. The build rate for the 10 CELV program was optimized to accommodate several factors such as budgetary constraints, maintenance of a production base, etc. For a 23 vehicle program, the optimal build rate increases to six vehicles per year. The FY 1986 Supplemental request includes the necessary funding for additional tooling to support the optimal build rate.

Question. Are you saying it would be possible to build CELVs at higher than the optimal rate?

Answer. Although it would be possible to build at a higher than optimal rate, the expanded 23 vehicle program build rate is planned at the near optimal build rate of six vehicles per year. At production rates above this level, cost penalties associated with increased tooling would be incurred.

Question. What is the cost penalty for expanding CELV production beyond the optimal build rate?

Answer. To expand the CELV production beyond the optimal build rate of 6 per year would require an additional investment in tooling of approximately $120 million to achieve a build rate of 8 vehicles per year.

Question. Why is supplemental funding thought to be necessary in Fiscal Year 1986 if Congress expands the CELV program from 10 to 23 vehicles?

Answer. Supplemental funding in FY 1986 is necessary to purchase the required tooling to increase the production rate from approximately two per year up to five per year and to procure the long lead material and piece parts for the additional 13 CELVs at the most economical means. If these efforts were deferred until FY

1987, implementation of the Space Launch Recovery Plan, which is designed to reduce the payload backlog as rapidly as possible, would be severely delayed.

Question. For the record, provide the optimal build rate by year for a 23 CELV acquisition?

Answer. Without consideration of budgetary constraints, production base and, launch rate, the optimal build rate for a 23 CELV acquisition to satisfy the Space Launch Recovery Plan is:

FY 87	88	89	90	91	92	Total
1	3	6	6	6	1	23

Reserve

Question. In the original 10 CELV program, the Congress required the Air Force to hold 4 of the vehicles in reserve rather than expending them all by 1993 as was planned. General Kutyna, does the Air Force plan to comply wtih this Congressional direction?

Answer. In view of the Challenger accident, the Congress was notified by the Undersecretary of the Air Force on 28 Feb 86 that Air Force planning efforts to hold 4 vehicles in reserve were being redirected to support the Space Launch Recovery Plan.

Question. Will you seek priced contract options in the basic multiyear contract in order to keep this alternative viable? If the program is expanded from 10 to 23 CELVs, how would this issue be treated in the contract?

Answer. No, the launch 6, store 4 option is not viable in light of the space launch national emergency condition.

The proposed Space Launch Recovery Plan procures an additional 13 CELVs. All 23 CELVs must be launched to reduce the backlog of payloads as a result of the Challenger loss.

Mulityear Savings

Question. The Air Force claims that a multiyear contract for 10 CELVs will save $380 million over annual acquisitions. A present value analysis, which reflects the "time value of money" shows $137 million in savings by pursuing multiyear. Congressional Committees, the Congressional Budget Office, the General Accounting Office, and others have criticized the Department of Defense for its continued use of a 30 percent inflation multiyear used when budgeting for major weapons systems. The Committee's investigative staff recently reported that although OMB intended to stop use of the 30 percent inflation multiplier in the fiscal year 1987 budget, the Air Force interpreted this guidance to apply only to fiscal year 1987 and not subsequent years. Since the 10 vehicle CELV multiyear justification is predicted on bogus inflation rates, what would be the present value savings of the proposed 10 vehicle CELV program if the 30 percent multiplier were excluded from the analysis?

Answer. The projected savings of $380 million was derived by using OSD inflation indices dated 10 January 1986. The indices were revised by removing the inflation multiplier from fiscal year 1987 and subsequent years in response to Congressional direction. After applying the revised inflation indices (dated 19 February 1986), the multiyear savings is $328 million. The corresponding present value savings is $115.7 million.

Question. Provide for the record updated multiyear justification material, including a present value analysis, for the proposed 10 vehicle CELV acquisition that is based on 3 GFE IUS/7 procured Centaur upper stages (vice 10), on inflation rates without the multiplier, and elimination of the "restructure reserve". Please explicitly state major assumptions to facilitate GAO review.

Answer. True program cost for the 10 CELV acquisition is represented by a 10 Centaur and 10 Titan 34D7 procurement, not 7 Centaur/3 IUS and 10 Titan 34D7. In order to maintain the CELV program within FY 85, FY 86, and FY 87 fiscal constraints and preserve the Initial Launch Capability (ILC), the Centaur development and acquisition was deferred 18 months. Three ELV compatible Inertial Upper Stages that the Government had already purchased were substituted as the upper stage for the initial payload to be launched by CELV. The three Centaurs that will not be used on the 10 Titan 34D7s have all been assigned to specific payloads. Since the Air Force was able to buy 10 Centaurs at a very favorable unit cost, a decision was made to not reduce the quantity from 10 to 7 Centaurs for the multiyear request.

Consequently, the multiyear exhibits and the present value analysis for the 10 CELV acquisition program reflect the costs attributed to the multiyear contract. The cost of the three IUSs are viewed as sunk costs and are not included in the multiyear contract. However, the booster/IUS integration, facility modifications for IUS and the procurement of three sets of interface hardware are included in the analysis.

Question. How exactly were multiyear savings determined? Did the Air Force obtain actual contractor bids for both annual and multiyear procurement approaches? If not, explicity states assumptions you made.

Answer. The savings estimate of $380 million for the ten vehicle multiyear production program was determined by comparing it to a like production profile with annual contracting. The savings estimate was derived from a solid estimating base. The annual procurement estimates are based on contractor imputs, which were analyzed in conjunction with Air Force historical cost and pricing data from similar Titan III programs. The multiyear estimates were derived from an existing competitively derived incrementally funded contract. This contract is structured to acquire material for all ten units in much the same way as the economic order quantity (EOQ) portion of a multiyear contract.

In order to validate our multiyear savings estimates, we are planning to submit to Congress in June 1986 validated multiyear documentation that is based on annual and multiyear proposal data.

ADVANCE PROCUREMENT FUNDS

Question. The Air Force desires approximately $120 million in advance procurement funds in Fiscal Year 1986 to initiate "expanded advance buy leading to multiyear" for the CELV. Air Force budget documentation (exhibit P-7) indicates that a portion of these funds are required for Centaur upper stages. How much of the $120 million is for Centaur?

Answer. The P-7 reflects advance procurement funding needed for FY 86 through FY 88. None of the $120 million in FY 86 is for Centaur upper stage procurement which has been deferred 18 months. The FY 86 advance procurement is strictly for booster components and avionics piece parts.

Question. Since you plan to use Inertial Upper Stages (IUSs) for the first 3 CELV launches, why are Fiscal Year 1986 advance procurement funds thought to be necessary for Centaur?

Answer. None of the $120 million in FY 1986 is for Centaur.

Question. Provide for the record an exact breakout of the use of proposed CELV Fiscal Year 1986 funds by contract and task.

Answer. A breakout of the proposed CELV FY 1986 funds is shown below.

a. Development

	Million
Payload Fairing	$40
Solid Rocket Motor	50
Core Vehicle & Integration	60
Launch Facilities	30
Miscellaneous	20
Total	200

b. Procurement

FY 1986 advance procurement of $120 million to be used as follows: FY 1987 Buy (1 CELV)—$40 million

Long lead forgings for solid rocket cases, liquid engine domes & injectors, skin material for core tanks & payload fairings

Piece parts for avionics (relays, transmitters, transducers and EMVs, gyros, accelerometers)

Start fabrication on liquid engines, SRM cases, core tanks, buildup avionics boards

FY 1988 Buy (2 CELV)—$45 million
    Long Lead
    Piece Parts
FY 1989 Buy (1 CELV)—$15 million
    Long Lead
    Piece Parts
FY 1990 Buy (1 CELV)—$10 million
    Piece Parts
FY 1991 Buy (2 CELV)—$10 million
    Piece Parts

BUDGET DATA

Question. Explain why the total annual request/multiyear cost figures in multiyear exhibit 3 differ from the budget lines of multiyear exhibit 5?

Answer. During the review and approval cycle by the Air Force, the total annual request/multiyear cost figures in multiyear exhibit 3 were revised to include FY 1985 requirements, as well as other government costs such as, range support, change orders, incentives and propellants. This same revision should have been made to the budget line in exhibit 5.

Question. The Air Force claims to have produced savings due to "favorable negotiations of the FY 1986 IUS buy". Show by appropriation and line item what was requested of Congress in the fiscal year 1986 budget for IUS, and compare it to the contract value.

Answer. The IUS funding request by appropriation compared to contract value for FY 86 is shown below. All requests are contained in PE 35171F, Space Shuttle Operations (formerly Space Launch Support):

[In millions of dollars]

		FY 86 Request	FY 86 IUS Contract Value
3600	FY 86PB	$3.4	$3.2
3020	FY 86PB	240.0	[1] 94.2
3400	FY 86PB	107.2	58.1

[1] $41.9M in supplemental agreements to be negotiated.

The President's Budget request also contains funding for technical support from Aerospace, IUS independent verification and validation, and range support. These non IUS contract costs are explained below.

The total FY 86 budget request for procurement funds for PE 35171F was $296.OM. The actual appropriation was $261.0M. Gramm-Rudman and general reductions resulted in $227.2M total procurement funds for PE 35171F. Of this amount, $96.9M was allocated to the IUS as shown in the Feb 1986 P-34 Exhibit. The remaining production funds were allocated to Centaur, PAM-D II, and Vandenberg Air Force Base Spares as shown in the Feb 86 P-34 Exhibit. Recognizing the cost savings due to favorable negotiations, our FY 87 budget request for PE 35171 was reduced by $28M. The current FY 86 allocations for RDT&E and O&M are $6.8M and $84.9M respectively.

The cost savings due to favorable negotiations can be seen in the following IUS unit cost history:

[Dollars in millions]

	Unit Cost
Aug 1984 Briefing to Program Office (concerned DSP would transition to Centaur)	$48.3
Apr 1985 Boeing proposal to Space Division (contained 18% profit)	44.8
May 1985 Boeing proposal to NASA for TDRSS (contained 14% profit)	41.7
Aug 1985 Space Division negotiated contract value (contained 15.5% profit)	39.5
Mar 1986 Boeing TDRSS best and final offer (contained 14% profit)	37.0
Current Space Division contract value	39.9

The Boeing IUS contract is for production of three vehicles and launch services for all remaining IUS vehicles (12 total—3 on this contract and 9 from previous contract). Over half of the total contract value of $417.3M is for launch services.

The total on contract production costs for 3 vehicles is $119.7M (72.4M advanced buy in FY 85 and 52.3M in FY 86). The Feb 86 Exhibit P-34, page 213, shows total production costs for 3 vehicles of $161.6M which includes the $119.7M and the $41.9M in supplemental agreements.

Question. Describe the major features of the IUS contract.

Answer. The major features of the IUS contract are production of three IUS vehicles for DSCS launches on the Shuttle and the assembly and integration of the vehicles with the DSCS spacecraft. The contract also provides for launch services for all IUS launches. The contract is a Fixed Price Incentive Fee/Award Fee at a cost of $417.3 million.

Question. Describe what funds are being held against the IUS program for non-contract costs.

Answer. Funds for the following "non-contract costs" in FY 86 are being held against the Shuttle IUS for the DSCS program:

[In millions of dollars]

	3600	3020	3400	Total
Program Support	$1.6	$[1] 2.5	$[1] 12.2	$16.3
IUS Independent Verification & Validation (IV&V)	2.0		6.0	8.0
Eastern Test Range Support			8.6	8.6
Total	3.6	2.5	26.8	32.9

[1] The FY 86 3020 and 3400 costs are for Aerospace.

Question. Were FY 84 and 85 funds provided for Shuttle IUS? If so, provide a breakout of non-contract costs for those years also.

Answer. FY 84 and 85 funds were provided. The FY 84 and 85 non-contract costs are as follows:

FY 84	*Million*
3600—Special Studies & Program Support	$3.1
3020—Aerospace	2.2
3400—IV&V (7.6)	
—Aerospace (13.0)	
—Range Support (8.9)	29.5
Total	34.8
FY 85	
3600—Special Studies & Program Support	3.3
3020—Aerospace	2.4
3400—IV&V (7.0)	
—Aerospace (12.3)	
—Range Support (7.5)	26.8
Total	32.5

Question. Show by appropriation and line item the amount in fiscal year 1987 for IUS, and compare it to the estimated contract cost now that FY 1986 costs are known. Indicate if FY 1987 IUS contract options exist.

Answer. The IUS funding request by appropriation for FY 1987 is shown below. The total request is contained in PE 35171F.

[In millions of dollars]

	FY 87 Request	FY 87 Contract Value
3600	$9.7	$8.2
3020	5.6	2.9
2400	91.3	61.1

The request also contains funding for program support, IUS independent software verification and validation and range support. The IUS contract contains options for integration and launch services exercised at the start of each fiscal year.

Question. Break out the $30.2M in non-contract costs for program support, independent verification, etc.

Answer. The FY 87 non-contract costs are as follows:

	Millions
3600—Special Studies and Program office Support	$1.5
3020—Aerospace	2.7
3400—IV&V [1] (6.3)	
—Aerospace (16.5)	
—Range Support (7.4)	30.2
Total	34.4

[1] Independent Verification and Validation

Question. The P-exhibits in the Fiscal Year 1987 budget should reflect the proposed CELV reprogramming. Explain what the $25.3 million FY 1985 space boosters is for, how much is obligated, and how the funds will be used. How were these funds to be used before the CELV reprogramming decision was made?

Answer. The $25.3 million in FY 1985 Space Boosters was originally to be used for Transtage procurement. At this time, $4.2 million has been obligated. In addition, $1.2M was allocated to a Congressional undistributed reduction, therefore the balance of FY 1985 funds is $19.9 million. As a result of successful Transtage negotiations, these funds are no longer required for Transtage and are now available for reprogramming to offset the non-recurring tooling costs for CELV.

Question. What is the maximum number of CELV's that could be started with Fiscal Year 1986 advance procurement funds if the multiyear acquisition strategy is not approved by Congress.

Answer. If the multiyear acquisition strategy is not approved by Congress, one CELV could be started with FY 1986 advance procurement funds. The balance of the FY 1986 funding would be used to offset the costs associated with renegotiating agreements at the prime and subcontract levels which had been previously based on a ten unit buy.

Disapproval of the FY 1987 multiyear initiative would also result in up to a six month delay in delivery to the Cape of the second and subsequent fully funded launch vehicles. This delay would have a direct impact on the Space Launch recovery plan with the severity driven by the Shuttle downtime.

Question. Explain the discrepancy between the $120 million needed for CELV advance procurement on the multiyear justification exhibit and the $116.1 million shown on the reprogramming request.

Answer. The total FY 1986 missiles procurement appropriates was allocated between procurement and advance procurement.

Due to recent Congressional reductions, the actual funding available in FY 1986 is $113.8 million. An audit trail of the reductions is as follows:

	Millions
Appropriated	$126.9
Undistributed cuts	−6.7
Total	120.2
Gramm-Rudman	−6.4
Total	113.8

At the time of the reprogramming submittal, only $4.4 million out of a total anticipated undistributed cut of $6.7 million was taken by DOD, therefore the available funding appears as $116.1 million in the reprogramming documentation. Since that time, the remainder of the undistributed cut has been withdrawn.

[CLERK'S NOTE.—End of question submitted by Mr. Chappell.]

Mr. CHAPPELL. Thank you very much.

General KUTYNA. Thank you.

Mr. CHAPPELL. The committee will stand adjourned until 10:00 tomorrow morning.

ADDENDUM

PROCUREMENT POLICIES AND PRACTICES

[CLERK'S NOTE.—Information on several subject areas was not provided in time to be printed with the hearing (pages 425–529). Therefore, this information is printed at this point. The subject areas are: Standards for Logistics ADP Systems, Commodity Command Standard System (CCSS), Leased Aircraft, and the Report on the Automated Logistic Systems.]

STANDARD FOR LOGISTICS ADP SYSTEMS

Question. Place in the record at this point a table showing DoD logistics ADP system expenditures by each fiscal year, appropriation and major system since fiscal year 1980. Include both the costs for upgrades and for operating existing systems.

DLA Answer. In the Procurement Appropriation equipment is purchased under consolidated procurements to support all DoD logistics ADP system. Therefore expenditures by major system cannot be provided. The O&M costs by logistics ADP system is as follows:

[Dollars in thousands]

	FY80	FY81	FY82	FY83	FY84	FY85
SAMMS	21.8	23.8	29.2	32.4	33.6	35.41
MOWASP/DWASP	8.7	9.9	10.5	12.4	14.0	14.6
MOCAS	13.3	17.1	27.4	30.8	35.8	24.7
DIDS	9.3	10.0	15.0	12.5	15.4	15.1

The Agency's total O&M and PDA for ADP and telecommunications are as follows:

[Dollars in thousands]

	FY80	FY81	FY82	FY83	FY84	FY85
PDA	.5	2.1	8.4	7.2	19.9	55.1
O&M	129.9	147.8	168.1	191.3	217.5	227.5

Army Answer. Since it has not been routinely required to report expenditures categorized by automated system, the Army's accounting system is not structured in such a way as to provide the information requested.

Navy Answer. Following are the amounts for the ADP logistics systems classified as major automated information systems. The requested data is bing provided through FY 1985 since that is the last full fiscal year for which data is available.

MAJOR LOGISTICS SYSTEMS

[Dollars in millions]

	FY 1980	FY 1981	FY 1982	FY 1983	FY 1984	FY 1985
Uniform Inventory Control Point [ICP] Redesign:						
O&M,N	3.8	8.9	12.3	25.7	22.6	29.2
OPN	2.1	0	0	0	0	6.0
Total	5.9	8.9	12.3	25.7	22.6	35.2
Stock Point ADPE Replacement [SPAR]:						
O&M,N	0	0	2.8	2.8	4.9	7.0
OPN	0	0	0	0	0	0
Total	0	0	2.8	2.8	4.9	7.0
Stock Point Logistics Integrated Communications Environment [SPLICE]:						
O&M,N	0	.9	2.6	3.7	8.5	7.4
MPN	0	0	.1	.1	.1	.1
OPN	0	0	0	0	9.2	10.0
Total	0	.9	2.7	3.8	17.8	17.5
Naval Aviation Logistics Command Management Information System [NALCOMIS]:						
O&M,N	3.9	4.9	7.0	8.1	12.6	18.5
MPN	0	.1	.1	.3	.4	.6
OPN	.6	1.1	4.7	.5	3.5	22.2
Total	4.5	6.1	11.8	8.9	16.5	41.3

Air Force Answer.

AFLC LOGISTICS ADP SYSTEMS

[In thousands of dollars]

	FY80	FY81	FY82	FY83	FY84	FY85
3400						
SC&D			700	1,300	1,400	19,500
RDB					12,900	26,900
LOGC^{3}I						1,600
ETADS				403	700	1,400
EDCARS					500	1,100
WDMIS			500	2,465	3,600	6,700
CDMS				244		600
DMMIS					500	400
LAN				3,800	1,800	42,500
ISG					2,100	4,500
TIC				988	612	1,700
FCMS		190	990	990	1,200	2,000
PMSS						2,300
REMIS				2,400		2,200
ATOS					3,400	3,500
CPAS						
Total AFLC LMS modernization	0	190	2,190	12,590	28,712	116,900
Upgrades and operating systems	22,500	28,910	40,110	40,010	58,890	69,800
Total	22,500	29,100	42,300	52,600	87,602	186,700

AFLC LOGISTICS ADP SYSTEMS—Continued

[In thousands of dollars]

	FY80	FY81	FY82	FY83	FY84	FY85
3080[1]						
SC&D					300	10,605
RDB						8,950
LOGC^{3}I						820
ETADS						612
EDCARS					6,500	4,811
WSMIS						4,877
CDMS						500
DMMIS						1,846
LAN						63
ISG						4,665
TIC						
FCMS						
PMSS						3,200
REMIS						
ATOS						4,084
CPAS						
Total AFLC LMS modernization	0	0	0	0	6,800	45,033
Upgrades and operating systems	0	600	10,000	12,700	7,800	7,827
Total	0	600	10,000	12,700	14,600	52,860

[1] These figures reflect the impact of Gramm-Rudman legislation and as such, will in some lines not match those submitted in the FY87 President's Budget.

Question. Provide for the record by system the current life cycle cost estimate for each automated logistics information system.

OSD Answer. The following represent the near-time program modernization cost for the major automated information systems (AIS). DoDD 7920.1 defines costs from the Mission Analysis/Project Initiation phase through the extension and installation to the developed AIS at all sites. It does not include normal operations.

FY 86-91

AIS	*Thousands*
SAMMS	$115.3
DWASP	51.6
MOCAS	34.8
DIDS	53.0

Army Answer. Life cycle cost estimates for major automated logistics systems are provided below.

Automated System	*Millions*
Commodity Command Standard System (CCSS)	$765
CCSS Modernization	108
Standard Depot System (SDS)	545
SDS Modernization	44
Integrated Procurement System (IPS)	55
Computer Aided Logistics Support/Technical Information Management Systems (CALS/TIMS)	232

Navy Answer. The following are the life cycle costs for the ADP systems classified as major automated information systems:

Life Cycle Cost

System	*Millions*
ICP Redesign	$550.0
SPAR	1500.0

System	*Millions*
SPLICE	171.0
NALCOMIS	568.3

Air Force Answer. The life cycle cost estimates for the programs in the Air Force Logistics Command Logistics Management Systems Modernization Program are:

	Million
Stock Control and Distribution	$365
Requirements Data Bank	369.5
Depot Maintenance Management Information System	174.1
Engineering Data Computer Assisted Retrieval System	79.7
Weapon System Management Information System	115.5
Enhanced Transportation Automated Data System	10.7
Local Area Network	255
Intersite Gateway	38.1
Contract Data Management System	79.3
Automated Technical Order System	123.7
Reliability and Maintainability Information System	145.4
Central Procurement Accounting System	11.7

Question. Provide for the record by system the current life cycle cost estimate for each nonmajor automated logistics information system whose life cycle cost is estimated to exceed $25 million.

Answer. The following shows the near-term program modernization costs for the nonmajor automated logistics information system whose cost is estimated to exceed $25 million.

FY 86–91

AIS	*Thousands*
DISMS	$50.4
DRMS	39.7

Army Answer. Life cycle cost estimates for those non-major automated logistics systems that exceed $25 million are as follows:

Automated System	*Millions*
Army Food Management Information System (AFMIS)	$170
Standard Army Automated Contracting System (SAACONS)	67
Standard Army Retail Supply System (SARSS)	186
Standard Army Maintenance System (SAMS)	176
DAMMS Redesign/Movement Planning Module	82
DA Standard Port System—Enhanced (DASPS–E)	41
Standard Army Ammunition System—Level 4 (SAAS–4)	44
Transportation Coordinator Automated Command and Control System	54
Standard Property Book System (SPBS)	50
Standard Army Intermediate Level Supply System (SAILS)	100
Direct Support Unit Standard Supply System (DS4)	123
Unit Level Logistics System (ULLS)	451

Navy Answer. The Navy does not maintain a central list and life cycle costs of non-major automated logistics information systems. The information is maintained for the major automated logistics systems, the data for which was provided above.

Air Force answer. The current life cycle cost estimates for non-major systems exceeding $25 million area:

	Million
Reliability and Maintainability Information System	$145.4
Automated Technical Order System—Phase I	39.5
Automated Technical Order System—Phase II	84.2

COMMODITY COMMAND STANDARD SYSTEM (CCSS)

Question. The Commodity Command Standard System is a backbone logistics system whose life cycle cost is estimated to be $765 million. The Army's budget documentation states that under CCSS "acquisition of large-scale computers to replace the currently installed equipment is being pursued." Dr. Wade, why is this necessary?

Answer. The current CCSS mainframes are becoming saturated because of the continued increase in interactive processing. New programs such as management by weapons system and the Integrated Procurement System (IPS) must be incorporated in the CCSS. A cost/effectiveness analysis has determined that the upgrade of the CCSS mainframe computers is more cost effective than would be the addition of ancillary computers to handle the increased CCSS capacity requirements resulting from these conditions.

Question. How much will it cost?

Answer. Army's estimated costs are as follows:

	Million
Commodity Command System (Life Cycle Cost)	$765
CCSS Modernization (Software redesign)[1]	108
Integrated Procurement System (IPS) (Software design)	55

[1] Incorporates Weapon System Management

Question. What analyses of the wisdom of this investment have you personally made, Dr. Wade?

Answer. The Army's Action Plan has been reviewed in detail. The modernization of CCSS software and the upgrade of CCSS hardware has been determined to be the most cost effective approach. CCSS will be reviewed under the Major Automated Information Systems Review process throughout the acquisition cycle.

Question. A recent GAO audit (Army Materiel Command Needs to Follow Procedures: Code 510011) is extremely critical of the Army's ADP management of CCSS. Specifically, the Army has consistently failed to follow Army ADP directives, perform economic analyses, track project costs, and review completed projects. The Congress is thus placed in the position of approving CCSS projects regardless of whether they are economical, worth the cost, or are the most cost-effective alternative available. Dr. Wade, what procedural changes do you plan to make in light of GAO's adverse findings on the Department's management of this system?

Answer. The Department has already begun action to improve oversight of this and similar systems. Within OASD (A&L), additional personnel resources have been set aside to review management and acquisition of information systems at three levels. The first level involves the review of DoD Component Acquisition and Logistics systems modernization actions. The MAISRC is the principal process employed at this level; the Army's Commodity Command Standard System (CCSS) will be reviewed under the MAISRC process. The second involves joint DoD projects to improve Acquisition and Logistics systems. Computer Aided Logistics Support (CALS), Modernization of the Defense Logistics Standard System (MODELS), and Weapons Systems Management (WSM) are examples of such efforts. At the third level, we are now taking a broader perspective which looks across the systems being reviewed at level I and the Defense-wide projects being conducted at level II. The objective is to establish a strategic Acquisition and Logistics Information Systems plan to ensure that systems modernization proceeds on a coherent, coordinated and prioritized basis.

Question. Do you plan to conduct a fully competitive acquisition?

Answer. Yes, a competitive acquisition is planned.

LEASING AIRCRAFT

Question. Did the Air Force first obtain a formal legal opinion on the contractual limits over the number of hours it may fly leased C–21 aircraft at the present fixed monthly rental rates, before requesting proposals and initiating negotiations with the contractors for a monthly utilization rate of 78 hours per aircraft?

Answer. Yes, the Air Force Contract Law Center provided the Air Force a verbal legal opinion, followed by a written opinion.

Question. What is the status of negotiations and does the Air Force envision a sizable increase in the monthly rental rates as well as in the contractor logistics support rates?

Answer. C–12F: Negotiations and contract changes are complete. The monthly rental rate increase was negligible (less than 1%) and the contractor logistics support (CLS) rates remain unchanged.

C–21A: Negotiations are complete and the system program office is awaiting direction and funding to proceed. Since contract negotiations were predicated on the purchase of all 80 aircraft by Jan 87, if the Air Force buys early, lease costs will not increase. However, CLS rates would increase approximately 25% at the higher utilization rate.

Question. Will the Air Force receive any reduction in the purchase option prices if the aircraft are used more each month? If not, why not?

Answer. The contract incorporates not-to-exceed option prices at the 5-year and 8-year points. The contract requires that we pay fair market value at the time of purchase to be determined by market conditions at that time. This would include consideration for remaining airframe life.

Question. Did the Air Force obtain an early buyout price for C–21s that is lower than the inital purchase option price of $2.7 million?

Answer. Yes, the Air Force negotiated purchase prices with Gates Learjet Corporation which are below the not-to-exceed purchase option price of $2.7 million. These prices are good until Jan 87.

Question. Since the Air Force negotiated fixed rather than variable monthly rental rates, were fluctuations in monthly usage recognized or ignored when leases were negotiated in 1983?

Answer. Program direction recognized only a fixed flying hour program. Therefore, the request for proposals and the final contracts did not provide for any variation in monthly rental rates.

Question. What extra costs would be justified and allowable in accordance with procurement regulations, if the Air Force would be legally obliged by contract terms to amend the contract for increased utilization?

Answer. Only increased support costs (time, material and wear and tear) would be allowable.

Question. If the contracts are amended, will rental rates fluctuate in accordance with monthly utilization rates as Air Force needs?

Answer. The Air Force has already amended the C-12F contract to allow for total flexibility in aircraft rental rates; however, rental rates will fluctuate on a yearly and not a monthly basis. As the yearly utilization rate fluctuates around an arithmetic average (e.g., 56 hours/aircraft/month) the Air Force will compensate Beech Aircraft Corporation for wear and tear on the aircraft. If the Air Force amends the C-21A contract, they will try to incorporate the same flexibility.

Question. How does the Air Force interpret the lease contract provisions for a contingency rate of 5 hours per day per aircraft for 30 days each year? Would those provisions apply to leased C-12 and C-21 aircraft participating in DOD annual deployment readiness exercises? What other special circumstances might they apply to without the Air Force being obliged to pay additional rent for exceeding an average utilization rate of 56 hours per aircraft per month?

Answer. Under the terms of the contract, the Air Force can direct the contractor to provide support (spares, support equipment and manpower) for a utilization rate of 5 hours/aircraft/day for up to 30 days in any one year and recognize any adjustments. These provisions apply during designated military exercises when so directed. The Air Force compensates the contractor for the support under the "Over and Above" provisions of the contract. Increased support costs (time, material, wear and tear) could be paid.

Question. How should the Air Force determine the average monthly utilization rate per aircraft under the contracts? Month-by-month for a full calendar or fiscal year, and should it be an overall average for the entire fleet of each type aircraft or a separate average for each organization which possesses them?

Answer. The Air Force uses the arithmetic average of the fleet, over a given fiscal year, for each type aircraft.

Question. Has the Air Force developed a plan that will permit it to analyze and select the option most favorable to the Government from a cost and performance standpoint, when the initial contract lease periods expire for these aircraft?

Answer. Yes, the Air Force will compare the discounted present value of the costs associated with each option using a discount rate based upon the interest rate for United States Treasury securities with a time to maturity equal to the period for the lease option. For each alternative, the Air Force will also consider all pecuniary and non-pecuniary factors in the decisionmaking process.

Question. Has the Air Force identified critical dates and lead time that will allow for timely consideration of all options?

Answer. The Air Force will decide which option to pursue during the normal course of its Program Objective Memorandum (POM) deliberations for Fiscal Years 1989-1991. While there are no specific dates/lead times established, the POM process will allow for timely consideration of all options.

Question. Do the DOD-approved wartime readiness requirements for operational support aircraft in the Air Force justify the retention by the Air Force of its fleet of 120 leased aircraft, both as to total numbers of each and the mix?

If not, what are DOD's views on reducing the number excess to requirements by either a partial termination of the lease or waiting until some 5-year lease periods expire?

Answer. Yes. The Air Force documented its requirement for over 145 Operational Support Aircraft (OSA) aircraft in an OSA Wartime Requirements Study (June 1982). The Air Force provided a copy of the OSA study to Congress along with a plan which outlined a program for replacing the CT-39 aircraft (on a one-for-one basis) with leased C-12F and C-21A aircraft. In 1985, the Defense Resources Board (DRB) directed OSD/PA&E to review each service's OSA requirements and to report their findings to the DRB. This review is still ongoing. The Air Force has worked very closely with OSD/PA&E and briefed the DOD executive committee sponsoring the review on the number and mix of OSA aircraft required in wartime to meet the Illustrative Planning Scenario of the Defense Guidance. However, until OSD publishes their study, the Air Force cannot release the results of OSD's analysis.

REPORT TO THE
COMMITTEES ON APPROPRIATIONS
OF THE
UNITED STATES HOUSE OF REPRESENTATIVES
AND THE
UNITED STATES SENATE

AUTOMATED LOGISTIC SYSTEMS

PART I - COMPUTER AIDED LOGISTIC SUPPORT (CALS)

PART II - AUTOMATION OF TECHNICAL MANUALS AND ORDERS

DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
(ACQUISITION AND LOGISTICS)

WASHINGTON, D.C.

MARCH 28, 1986

REPORT TO THE
COMMITTEES ON APPROPRIATIONS
OF THE
UNITED STATES HOUSE OF REPRESENTATIVES
AND THE
UNITED STATES SENATE

AUTOMATED LOGISTIC SYSTEMS

EXECUTIVE SUMMARY

ES.1 PURPOSE

This document reports on DoD's plans for and progress toward--

- Automating the creation and distribution of logistic data and
- Reducing the amount of technical paperwork required for weapon system procurement and logistic support.

The Committee on Appropriations of the House of Representatives, in its Report on the FY 1986 Defense Appropriations Act, directed the Department of Defense to report on efforts to automate logistic support and reduce paper-based technical documentation. The Senate Committee on Appropriations also requested a report on reducing paper-based technical manuals and technical orders.

Part I of this report responds to both requests and considers the total issue. Part II focuses specifically on technical manuals and technical orders.

ES.2 DEFINITION AND SCOPE

Computer Aided Logistic Support (CALS) is a program established by the Department of Defense. CALS will--

- Apply both existing and emerging communications and computer aided technologies to improve the productivity, quality, and timeliness of logistic support.
- Focus specifically on integrating automated processes to create, store, retrieve, use, and exchange weapon system logistic technical information by--
  - Actively influencing the design process to produce weapon systems that are more reliable and easier to support and maintain;
  - Automating the development, delivery, maintenance, and distribution of logistic support products; and
  - Reducing the quantity of technical paperwork needed to develop, acquire, support, and maintain military weapon systems.

Cost savings and other important benefits will repay CALS investments. Benefits include: quicker, more efficient procurement of spare parts; better, more efficient maintenance on operational weapon systems; and more effective logistic planning and management for new weapon systems.

Because industry creates most of the logistic support information that DoD uses, CALS development and implementation must be a joint industry-DoD process. CALS will include the interfaces that link (1) prime contractors to their suppliers and (2) industry to the Military Departments and Defense Agencies. These interfaces will be defined by contractual requirements that can be satisfied by industry integration and improvement of automated data processes. Interfaces will also be defined by data interchange specifications that will facilitate communications among a variety of dissimilar hardware systems.

CALS will span the program life cycle of weapon systems from pre-concept planning, through development and support, to product disposal. CALS will be implemented across all weapon systems and throughout the Department of Defense. The transition from paper to digital-based systems involves many government organizations and industrial firms. It will mean fundamental changes in creating, acquiring, and managing technical information. To be efficient, however, CALS implementation must be evolutionary, not revolutionary. CALS will be gradually implemented as new weapon systems are developed and selectively backfitted to incorporate existing weapon systems where cost-effective.

ES.3 OVERVIEW

Over the past 5 to 10 years, DoD components have undertaken numerous data automation efforts responding to both user needs and Congressional direction. At the same time, industry has rapidly implemented such new technologies as computer aided design (CAD), computer aided engineering (CAE), computer integrated manufacturing (CIM), and automated authoring and publishing systems.

ES.3.1 Islands of Automation

DoD and industry initiatives have led to "islands of automation" in the midst of what is largely a paper-based acquisition and logistic support environment. These islands tend to be functionally oriented and often cannot communicate with one another electronically. In many cases, the need for data interchange is being met by paper output and data re-entry, to the detriment of efficiency, timeliness, and accuracy. Both DoD and industry recognize the problem and have identified the need for integration.

ES.3.2 Joint Industry-DoD Task Force

In 1985, a Joint Industry-DoD Task Force on Computer Aided Logistic Support recommended that DoD initiate a program to integrate and accelerate its use of automated logistic support technologies. The Task Force further recommended that DoD adopt or develop a set of interface standards for interchanging logistic technical information within and among DoD and industry systems. To implement the recommendations, DoD established the CALS program.

The Task Force also recommended that DoD provide a common, across-the-Services interface with industry. The DoD initiative incorporates this feature. As a central objective, CALS will establish compatible systems to facilitate interfaces with industry and among DoD elements. Common DoD data interchange standards and, in some cases, common hardware systems will be needed to achieve this objective.

ES.3.3 Deputy Secretary's Memorandum

The Deputy Secretary of Defense has established a top level CALS management organization and has directed the Military Departments and Defense Agencies to implement the CALS program. This report summarizes the overall DoD plan. The DoD components are now developing CALS implementation plans. These plans address standards development and validation, research and development demonstrations, and information system modernization within an integrated architecture.

The DoD components have a number of automation efforts under way that form the starting point for CALS. The components are now developing prototypes and test bed programs for CALS integration.

DoD has set a goal to make the transition from current paper-intensive logistic support processes to a largely automated and integrated mode of operation for weapon systems entering production in 1990 and beyond. DoD will apply CALS automation and integration to data in existing systems on a case-by-case basis when implementation will be cost-effective.

Figure ES.1 shows milestones for implementing CALS. Initial improvements will occur in the 1986-1988 period, primarily through automating engineering data repositories and technical manual processing. By 1988, DoD will have demonstrated capabilities to receive data from defense contractors in digital form using industry exchange standards. From 1987 to 1990, DoD will develop and validate specifications to acquire logistic technical information in digital form through lead weapon system programs. Routine acquisition of digital data during weapon system acquisitions will begin in the early 1990s. If a concerted planning and management effort gains impetus now, the large scale transition to a CALS environment will be completed by the mid-1990s.

ES.3.4 Funding

Table ES.1 shows FY 1986-1988 funding as of the FY 1987 President's Budget. It includes: (1) initial funds to establish automated DoD repositories, automated technical manual processing systems, and computerized design engineering installations; (2) funds to develop and demonstrate subsystem elements such as user terminals for paperless delivery of logistic and maintenance information; (3) funds for system designs, architectures, and demonstration projects to verify the designs; and (4) funds to develop and verify data interchange standards to permit data to flow between diverse systems.

MILESTONES	1986	1987	1988	1989	1990	1991	1992
Key Implementation Steps							
1. Assign CALS management responsibilities	●						
2. Standards for data interchange							
- Product definition data	• -	◆---	----	----	----	----	---●
- Text and graphics	• -	◆---	----	----	---●		
- Database			•---	----	◆---	----	---►
3. Functional specifications in weapon system contracts			•---	----	◆---	----	---●
4. Implementation of CALS standards and architecture in integrated DoD info systems			•---	----	◆---	----	---●
Functional Capabilities							
1. Engineering drawings							
- Automated storage/retrieval	◆---	----	----	----	---●		
- Centralized index locator system			◆---	---●			
- Standardized digital input to repositories	• -	◆---	----	----	----	----	---●
- Digital output to contractors for competitive spares buy			•---	----	◆---	----	---●
2. Technical publications							
- Automated authoring and publishing (paper output)	•---	---◆	----	----	---●		
- Digital distribution with print-on-demand output		• --◆	----	----	----	---●	
- Paperless technical manuals for maintenance	• -	----	----	----	----	◆---	---●
3. Spares procurement							
- Highly automated bid package generation		• -	◆---	----	---●		
- Digital interface with suppliers		•----	----	◆---	----	----	---●
- Limited "parts on demand" flexible manufacturing			•---	----	----	◆---	---►
4. Maintenance							
- Automated design tools for improved R&M	• -	----	◆---	----	----	---●	
- Automated troubleshooting and field maintenance aids	• -	----	----	----	----	◆---	---●

Legend. - • Demonstration Project
◆ Initial Operational Capability
● Substantial Operational Capability

Figure ES.1. CALS Milestones

Table ES.1

Funding for CALS ($ millions)
(As of FY 1987 President's Budget)

DoD Component	FY 1986	FY 1987	FY 1988
OSD	0.0	14.8	14.8
Army	33.8	23.6	41.2
Navy	52.9	73.0	75.0
Air Force	70.6	69.4	64.9
DLA	0.0	0.0	22.4
DoD total	157.3	180.8	218.3

The Military Departments and Defense Agencies are now developing implementation plans that will include funds for program work in FY 1988 and beyond and will identify unfunded requirements for FY 87. The FY 1988-1992 program review (summer 1986) will be the first opportunity for a corporate DoD review of CALS funding.

The OSD funding shown in table ES.1 is a new program element for CALS (PE63736D) starting in FY 1987. It supports the development of data interchange standards and near term demonstrations. This funding is essential to achieving compatibility among DoD systems and a unified interface with industry--without these efforts there would be no CALS integration program.

The funds shown in table ES.1 exclude the substantial investment required by industry to integrate and automate its processing systems to achieve improved and less costly logistic data. As a major task, CALS will develop contractor incentive approaches to foster industry investment in CALS modernization.

ES.4 BENEFITS EXPECTED FROM CALS

The CALS initiative will result in benefits that justify the cost and effort expended. These benefits include--

- Improving the design and the reliability and maintainability of weapon systems, making them easier to support and allowing them to be produced more rapidly;
- Saving an estimated 20 to 30 percent in the cost of obtaining technical information and logistic data from industry when acquiring weapon systems;
- Shortening administrative lead times for assembling competitive procurement data packages for spare parts;
- Enhancing the timeliness and increasing the accuracy of information provided for maintenance and supply functions;
- Reducing the use, distribution, and storage of paper products; and
- Reducing the costs of logistic support through improved planning.

ES.5 PROBLEMS AND ISSUES

The benefits noted above, however, cannot be expected immediately. Implementing CALS requires solving complex and difficult problems. Production of logistic technical data involves many government organizations and industrial corporations, ranging from the largest to smallest producers. These organizations use many different kinds of hardware and software for a wide variety of applications--from word processing and accounting, to engineering drawing preparation and inventory control, to computer aided design and computer integrated manufacturing.

In this environment, developing and implementing standards to exchange digital data and to solve computer interface problems poses a substantial challenge. Developing and implementing an integrated approach to modernize the DoD logistic infrastructure poses an equal challenge.

To achieve the potential benefits requires that DoD and industry address a number of problems and issues:

- DoD must rethink current paper-based logistic processes and implement an architecture for distributing and using digital data. This is a substantial system design and management problem.
- Integration of automated design processes must incorporate reliability and maintainability design rules and procedures for a number of product classes. This capability must be rapidly implemented throughout industry.
- Existing and proposed industry standards for data exchange must be refined, developed, and verified to cover additional DoD needs. Industry must implement these standards on an accelerated basis.
- The Military Departments and Defense Agencies must determine the best mix of delivery media for different user environments. They must also program funds for acquiring information processing and delivery equipment.
- DoD must develop contractual requirements for selective access to contractor data systems and for contractor delivery of digital data.

These elements must all be supported by management and adequately funded before CALS can be effectively implemented. Failure to implement CALS will predictably result in increased incompatibility among DoD system elements and continued difficulty in interfacing with industry.

ES.6 MANAGEMENT

CALS integration objectives cut across numerous functional and programmatic lines. CALS projects require R&D, procurement, and operating funds. They concern diverse technical issues in integrated system design and data exchange conventions. Also, the projects involve numerous DoD and industry organizations.

Management problems include maintaining a unified interface with industry across DoD, ensuring compatibility within and among the Services, and making maximum use of common equipment and software to avoid redundant developments. To address these concerns DoD--

- Has established an OSD CALS office that will oversee DoD system integration and address compatibility issues;
- Has required each Military Department and DLA to designate a senior CALS executive and establish a CALS office to coordinate CALS implementation efforts; and
- Has asked the National Bureau of Standards to provide major support for developing data interchange standards.

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Glossary

REPORT TO THE
COMMITTEES ON APPROPRIATIONS
OF THE
UNITED STATES HOUSE OF REPRESENTATIVES
AND THE
UNITED STATES SENATE

PART I

COMPUTER AIDED LOGISTIC SUPPORT
(CALS)

DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
(ACQUISITION AND LOGISTICS)

WASHINGTON, D.C.

MARCH 28, 1986

CHAPTER I

INTRODUCTION AND BACKGROUND

1.1 PURPOSE

This is Part I of a two part report to Congress required by the Committees on Appropriations in their reports on the FY 1986 Defense Authorization Act. This part of the report records DoD's plans for, and progress toward --

- Automating the creation and distribution of logistic data and
- Reducing the amount of technical paperwork required for weapon system procurement and logistic support.

1.2 REPORT ORGANIZATION

Part I is organized into five chapters and four appendices.

Chapter I introduces the report and provides a brief overview of Congressional interest and current DoD efforts. Chapter II discusses the DoD plan to develop and implement CALS and make the transition from paper based to digital logistic technical information processes. Chapter III summarizes the emerging implementation plans of the DoD Components. Chapter IV discusses imperatives for success. The final chapter summarizes the benefits that can be derived from CALS, the potential problems DoD faces in implementing CALS, and the conclusions reached to date.

The report stands on its own, but appendices convey additional detail and supporting documentation.

1.3 DEFINITION

Computer Aided Logistic Support (CALS) is the program established by the Department of Defense to --

- Apply both existing and emerging communications and computer aided technologies to improve the productivity, quality, and timeliness of logistic support.
- Focus specifically on integrating automated processes to create, store, retrieve, use, and exchange weapon system logistic technical information by --
    - Actively influencing the design process to produce weapon systems that are more reliable and easier to support and maintain;
    - Automating the development, delivery, maintenance, and distribution of logistic support products; and
    - Reducing the quantity of technical paperwork needed to develop, acquire, support, and maintain military weapon systems.

1.4 SCOPE

The CALS program is broad-based. Because industry creates most of the logistic support information that DoD uses, CALS improvements must be a joint industry-DoD process. CALS includes the interfaces that link (1) prime contractors to their suppliers and (2) industry to the Military Departments and Defense Agencies. Industrial associations have been asked to serve as an integrating mechanism.

Although certain logistic modernization activities that involve neither the industry-DoD interface nor the distribution of logistic technical information may be CALS related, they are not a formal part of the DoD CALS program. Such DoD internal activities as modernization of supply and transportation data systems have interfaces with the CALS program but are not addressed in this report.

1.5 NEW OPPORTUNITIES TO SOLVE OLD PROBLEMS

The logistic support environment has changed dramatically in the last few years. New technologies have emerged that offer considerable potential for more efficiency through improved weapon system design and increased automation of logistic technical information. Logistic problems associated with supporting our highly sophisticated and technically complex military weapon systems have also increased. The way DoD and industry create, acquire, and manage logistic technical information has not kept pace with the technology available to perform these functions.

1.5.1 Problems Addressed By CALS

DoD faces major problems in acquiring and using logistic technical information because the data are almost entirely paper-based and are rapidly becoming unmanageable. Requirements for logistic technical information to support new weapon programs -- drawings, specifications, manuals, and other logistic support data -- are growing exponentially. Figure 1.1, for example, shows the growth in technical manuals for operating and maintaining tanks.

The burden of creating, delivering, updating, managing, and using this volume of data in hard copy is becoming intolerable. As weapon systems have become more complex, these problems have not only added to weapon system acquisition and support costs but have also increased the potential for degrading system operational readiness and safety.

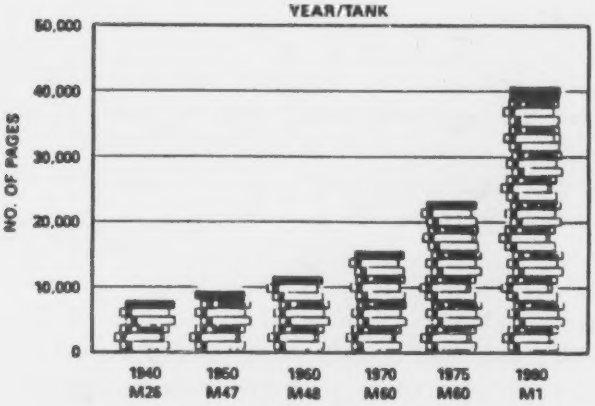

Figure 1.1 The Growth in Weapon System Technical Documentation

These problems can lead to --

- Technical manuals and training materials that are out-of-date and difficult to use and maintain;
- Engineering drawings that are incomplete, illegible, and impossible to control;
- Configuration management information that is inadequately documented and difficult to maintain;
- Logistic support data that are voluminous, redundant, and excessive, yet not readily available to users; and
- Reprocurement technical data packages for spare parts replenishment that are inaccurate and incomplete, and that take too long to prepare;

Industry, DoD, and Congress have recognized these problems and have identified the need to work together to take full advantage of emerging technologies.

1.5.2 Opportunities

Through CALS, DoD and industry will use emerging technology to: (1) design weapon systems that are easier to support, (2) make the transition from paper-based to digital logistic technical information, and (3) routinely acquire and distribute that information in digital form for new weapon systems.

CALS will span the program life cycle of weapon systems from pre-concept exploration through development, production, and support to product disposal. CALS will be implemented across all weapon systems and throughout the Department of Defense. This transition involves many government organizations and industrial firms. To be efficient, CALS implementation must be evolutionary, not revolutionary. CALS will be progressively implemented as new weapon systems are developed, and selectively backfitted where cost-effective.

1.5.3 Need For Integration

Because of the evolutionary nature of technological improvement and the long standing nature of the problems, various DoD components and industrial firms have already initiated modernization efforts. As a result, there now are "islands of automation" in a paper-based sea.

To achieve its full potential, the modernization of technical support information must occur across industry and DoD component boundaries. This requires close cooperation and continuous coordination. These efforts must involve all of the Services, appropriate Defense Agencies, the Office of the Secretary of Defense (OSD), and, most importantly, industry. As the need for major improvements became clear, the Department of Defense established a Joint Industry-DoD Task Force in 1984 to address Computer Aided Logistic Support needs.

The Joint Task Force made a comprehensive analysis of the problems and potential improvements. Its five volume report[1], published in June 1985, addressed policy and legal issues, information requirements, system architecture, and technology. It not only provided the basis for the DoD CALS program, but also served as a catalyst for future joint DoD and industry action.

Among its recommendations, two especially bear on this report to Congress. One calls for DoD to initiate a program to integrate and accelerate DoD and industry use of automated logistic support technologies. The second advises DoD to adopt a set of common DoD-industry interface standards for interchanging technical information on military weapon system acquisition and support. The DoD CALS plan, discussed in chapter 2, implements the recommendations of the Joint Task Force report.

Many forces have vested interests in an infrastructure that has remained essentially the same since the early 1950s. In spite of considerable inertia opposing major changes, the time has come to shift from a paper-based technical information environment to an integrated and automated joint DoD-industry logistic technical information environment. The new technologies associated with CALS require fundamental changes in the way logistic technical information is created, acquired, and managed. Those changes may bring with them major, still undefined changes in logistic support functions and processes. The future environment of CALS needs to evolve from the current system. It also must be developed and implemented while the support process for existing weapon systems continues.

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[1] IDA Report R-285, Report of the Joint Industry-DoD Task Force on Computer Aided Logistic Support (June 1985), available from the Institute of Defense Analyses and the Defense Technical Information Center.

The CALS plan calls for an evolutionary transition that moves forward steadily and surely. CALS will begin by integrating the "islands of automation" and by demonstrating and prototyping the required technology on selected lead weapon systems. The CALS program will be applied to new systems that come on line in 1990 and beyond. The program will incorporate technical data on existing weapon systems when and where it makes sense to do so.

1.6 LEGISLATIVE INTEREST

The most extensive statement of legislative interest in the issues addressed by CALS is the House Appropriations Committee Report on the 1986 Defense Appropriations Act. It requires that DoD provide a report on technical documentation initiatives. The Senate Appropriations Committee Report also directs a DoD report. The Conference Committee Report (C. 99-450) re-affirmed those statements. This report responds to those requests.

1.6.1 House Appropriations Committee Report

The House Appropriations Committee has been extremely interested in the concepts that the CALS program addresses. The Committee held hearings on the subject including witnesses from the Office of the Secretary of Defense, the Military Departments, and Defense Agencies. The Committee's report (H.R. 99-332) addressed automation in general and technical documentation enhancements specifically. It also directed a report addressing DoD efforts to acquire and distribute automated logistic support information.

The House Appropriations Committee's Report charged the Assistant Secretary of Defense (Acquisition and Logistics) to take the lead policy role to ensure maximum compatibility among the Services' logistic systems by developing and promulgating minimum standards. The House Appropriations Committee's report noted DoD's 10-point plan to end spare parts pricing abuse but suggested that additional savings could be realized by using automated distribution of logistic technical data within and among the various DoD components.

The House Appropriations Committee specifically directed that DoD submit this report to Congress. The Committee praised the Services' technical documentation initiatives but expressed concern that the projects needed Department-level oversight to ensure that they will be compatible and efficient. The Committee directed that DOD--

- Develop common electronic publishing standards and specifications;
- Prepare a plan for compatible, totally automated, digital electronic systems; and
- Establish a goal of 50 percent reduction in the use of paper for technical documentation.

The committee also requested that DoD report on its efforts to acquire and distribute automated logistic information in future weapon system acquisitions.

1.6.2 Senate Appropriations Committee Report

The Senate Appropriations Committee was more general in its comments. However, its report (S. 99-176) reinforced the House report. The Committee also was concerned about the quality and growing cost of DoD technical publications. Its report supported use of advanced computer technology for texts, engineering drawings, and other graphics but expressed concern that current efforts are unilateral, lack OSD oversight, and are in danger of resulting in incompatible and excessively expensive systems. The SAC directed a report to Congress similar to that required by the House Appropriations Committee.

1.7 THE CALS INITIATIVE

To respond to the Congressional mandate and to user needs, DoD has initiated efforts to develop a joint DoD-industry approach to the problems of automating logistic support processes. The Office of the Secretary of Defense and the Military Departments have taken initiatives that lay the foundation for implementing the CALS program.

1.7.1 CALS Policy Memorandum

On September 24, 1985, the Deputy Secretary of Defense signed a policy memorandum[2] that endorsed the recommendations of the CALS Task Force and committed DoD to the objective of making the transition from current paper-intensive design and logistic processes to a largely automated and integrated mode of operation for weapon systems entering production in the 1990s. The memorandum formally established the CALS program to integrate and manage logistic automation efforts toward this objective.

The CALS Program has three high payoff goals:

- Accelerating the integration of reliability and maintainability (R&M) design tools into industry computer aided design and engineering (CAD/CAE) systems;
- Accelerating the automation of processes used by contractors to generate logistic technical information; and
- Rapidly increasing DoD capability to receive, distribute, and use logistic technical information in digital form for spare parts management, training, and maintenance.

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[2] See appendix A.

1.7.2 Implementation Guidance

To achieve the CALS objectives, the Deputy Secretary of Defense memorandum directs the Military Departments and Defense Agencies to accomplish a set of implementing tasks. These include requirements to --

- Establish an organization within each affected DoD Component to manage CALS implementation;
- Develop a plan for modernizing DoD information processing capabilities to access, process, and distribute contractor logistic technical information;
- Establish a schedule for revising applicable military specifications and standards for acquiring logistic technical information in digital form;
- Conduct demonstration projects using data integration technologies to evaluate advances in the performance of logistic functions, and validate user requirements for future system design;
- Review new weapon system acquisition programs to determine automation opportunities for producing, delivering, and using digital product definition data and other logistic technical information;
- Determine long-haul communication and wide area networking requirements for CALS implementation;
- Establish a research and development program to meet CALS technology needs;
- Set priorities among technological issues;
- Implement industry investment incentives, contract requirements, and source selection criteria to support CALS objectives; and
- Develop and promulgate policies to foster rapid integration of weapon support systems.

Military Department and Defense Agency implementation plans are currently in the "initial draft" stage but will be available in final form for review by July 1, 1986. Key aspects of the draft plans are summarized in Chapter III.

1.7.3 Objectives

The CALS program will integrate ongoing and proposed initiatives to automate technical information in DoD and industry. The approach to this integration effort is to draw upon functional requirements to establish architectural guidelines and interface standards. These guidelines and standards will allow separate hardware and software systems to be functionally and technically compatible. They will facilitate the exchange of data in digital form between and among Defense prime contractors, their suppliers, and DoD components.

DoD will structure incentive programs, set contract requirements, and establish source selection criteria to accelerate industry implementation of CALS. Each of the Military Departments and Agencies will develop and implement the necessary data systems and interfaces to--

- Receive, distribute, and process logistic technical information and
- Provide secure access to authorized users.

1.7.4 CALS Target Capabilities

The CALS program will link a number of industry and government stand-alone systems, including:

- Computer aided design (CAD);
- Computer aided engineering (CAE);
- Computer aided manufacturing (CAM);
- Associated product definition data bases;
- Automated acquisition support systems; and

- Production of technical manuals, training data, and engineering drawing packages.

CALS will also provide an automated capability to transfer technical data between and among major government nodes (such as engineering data repositories) and other authorized users throughout the DoD and industry logistic communities. This does not imply design of a single central system. However, it does require that specifications for user systems conform to the common architectural guidelines and interface standards needed for system compatibility.

CALS target capabilities for the mid-1990s include:

- The capability to maintain weapon system configuration data on a near-real-time basis through the use of electronically distributed data bases.

  Integrated data bases of product definition and support information will be created during weapon system design. The data bases will be maintained and distributed electronically throughout the operational life of the weapon system.

- The capability to store, retrieve, distribute, and process logistic technical information in paperless form.

  Weapon contractors and subcontractors, who are the sources of design-related logistic technical information, will be coupled to DoD nodes and users for the electronic exchange of information, including the ability to produce hard copy where needed. This new paperless distribution capability will greatly improve the timeliness and accuracy of technical information. Attendant benefits will accrue in shorter down times for weapon systems, reduced manpower, and lower production and maintenance costs.

- The capability to integrate logistic technical information from a variety of interconnected data bases.

  For example, the logistic community will be able to access CAD and CAE design data bases to extract product definition data for spare parts procurement. It will also be able to produce technical manuals, maintain configuration control, and create logistic planning and analysis products. The CALS environment will have an automated "ripple through" capability to achieve rapid and accurate updates of logistic technical information. A single "functional data base," as seen by the user, will avoid redundant generation and processing of data.

- The capability to integrate design and design analysis processes by incorporating supportability objectives (e.g., reliability and maintainability) as quantitative design inputs and by providing both on-line design analysis and more complex off-line analysis of R&M characteristics.

  This includes the design of built-in and external test logic and software. It also includes analysis of fault detection and isolation capability.

- The capability to interface with flexible manufacturing systems to allow competitive parts production by a maximum number of automated facilities with much shortened lead times.

- The capability to provide DoD users with distributed systems that allow transparent access to required logistic technical data, are secure where needed, allow for automated updating based on design changes, and take advantage of decision support and expert system aids.

The CALS architectural concept appears in figure 1.2 (industry "front end") and figure 1.3 (long term objective for DoD interface with industry).

1.7.5 Congressional Mandate to Reduce Technical Manual Paper

The House Committee on Appropriations directed DoD to report on plans for automating its technical manual processes with the goal of reducing the use of paper by 50 percent. The DoD response, entitled "Automation of Technical Manuals and Orders," is Part II of this report.

The DoD effort to automate technical manuals and reduce dependency on paper-based technical support information makes up an integral part of the CALS effort.

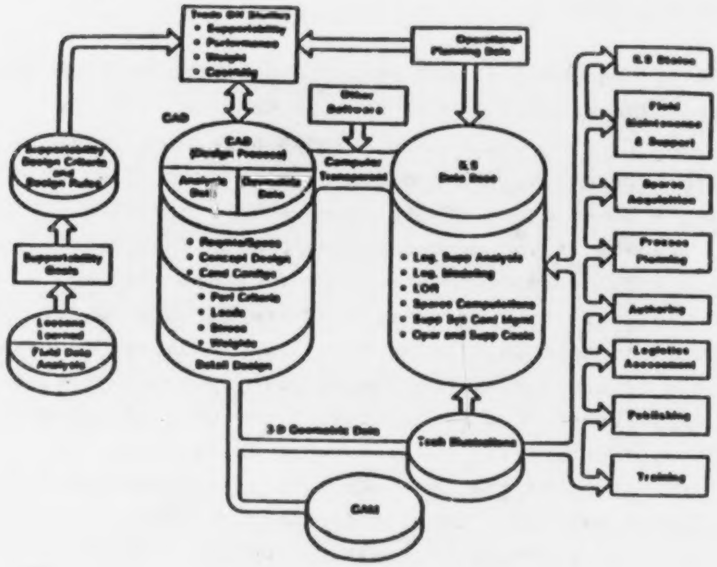
Supportability
Performance
Weight
Operational Planning Data
CAD
Other Software
CAD (Design Process)
Analysis Data
Geometric Data
Computer Transparent
Data Base
Supportability Goals
Field Data Analysis
Concept Design
Loads
Weights
Detail Design
Log. Supp Analysis
Log. Modeling
LOR
Spares Computations
Oper and Supp Costs
Field Maintenance & Support
Spares Acquisition
Process Planning
Authoring
Logistics Assessment
Publishing
Training
3-D Geometric Data
Tech Illustrations
CAM

Figure 1.2 Computer Aided Logistic Support

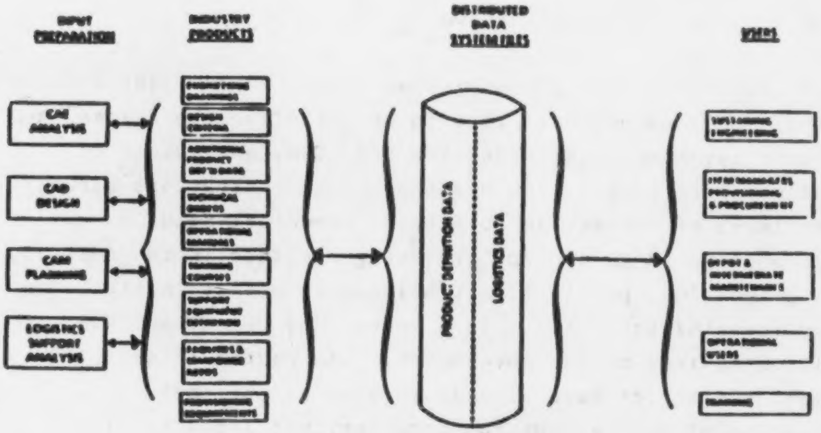
INPUT PREPARATION
INDUSTRY PRODUCTS
DISTRIBUTED DATA
USERS
CAE ANALYSIS
CAD DESIGN
CAM PLANNING
LOGISTICS SUPPORT ANALYSIS
PRODUCT DEFINITION DATA
LOGISTICS DATA
TRAINING

Figure 1.3 Long Term CALS Objective: Automated Life Cycle Logistic Data

1.8 COST EFFECTIVENESS

CALS will require cost effective investments by both DoD and industry. Investment decisions must consider (1) the immediate payoffs that occur from automating a particular weapon system support function, (2) the less easily quantified benefits that accrue in other areas of logistics when a specific automation project is integrated into a complete support process, and (3) the improvements in performance that may accrue from the new capability. An example of the first consideration is the reduced cost of publishing technical manuals. An example of the second is the savings in competitive spares reprocurement cost that will result from using digital product definition data generated by automating the weapon system design function. An example of the third is the improved safety that results from using up-to-date technical manuals for maintenance. The argument for cost effectiveness must be applied to three categories of investments: industry modernization, government modernization, and R&D investments.

1.8.1 Industry Modernization

Industry investments are already being made in areas that (1) demonstrate obvious economic payoffs or (2) offer the company a competitive advantage. Examples are CAD, CAM, and automated text and graphics composition systems. Most contractors already use some level of automation to prepare technical manuals. Reductions of 20 to 30 percent are being realized in the cost of producing technical publications, which will offset initial industry investments within 3 to 5 years, and result in data acquisition savings by the government. Contractor internal investment strategies have already focused on the cost effectiveness of such automation programs, and industry will continue to make these investments wherever direct cost savings can be identified. Other benefits, however, such as increased timeliness and accuracy of technical information by integrating design, engineering, and logistic planning accrue to the government but do not necessarily result in tangible benefits to the contractor. Some prime contractors are implementing integrated systems to provide these capabilities, but the scope and pace of the effort needs to be accelerated. For this reason, contract incentives may be needed in some cases to encourage industry to increase the priority of automation investments to meet CALS objectives.

1.8.2 Government Modernization

DoD investments will be made on the basis of both projected savings in operational costs, and performance benefits such as improved maintenance effectiveness or improved supply and procurement effectiveness. Initial DoD investments have been made in the two areas having the greatest near term payoffs: automated engineering data repositories and automated publishing and distribution systems. Savings on the order of those projected for industry systems (20 to 30 percent) are anticipated, along with major improvements in the management and use of technical data. Table 1.1 presents examples of the costs and benefits for these systems. Future CALS studies will seek to quantify the performance improvements of these and other elements of CALS integrated information systems. The principle remains, however, that priorities for funding individual modernization efforts will be based on their estimated benefits.

1.8.3 CALS Integration and Demonstration Projects

This category includes R&D investments to create the environment in which future industry and DoD modernization investments will occur. R&D efforts here include developing interchange standards and functional specifications for delivering data in digital form, lead weapon system demonstration projects, and supporting projects (such as

Table 1.1

Examples of Costs and Benefits of the CALS Program

Automation of Engineering Drawing Repositories

All three Services and DLA have efforts under way to automate repositories. The technology used for the Army Digital Storage and Retrieval of Engineering Drawing System (DSREDS) has been adopted by the Air Force and is being considered by the Navy and DLA.

($ millions)

Investment Cost	Army	Navy	Air Force	DLA
	34.8	45.4	21.3	12.0

Benefits

The Army DSREDS cost benefit study is typical. It shows that the investment is paid back in less than 4 years based on annual savings of $9.5 million in drawing revisions.

Automated Publishing Systems

The Army 600S system is a contractor operated service for automated publishing. No captial investment by the government is planned.

Investment Cost: None

Benefits

The annual operating cost ($15 million the first year of limited operations, growing to an estimated $100 million by the fifth year) represents a 25 to 30 percent saving compared to current printing costs.

Air Force Automated Technical Order System (ATOS)

ATOS is an in-house authoring, publishing, and distribution system to be installed in depot level facilities. Outputs to the base level will be in paper form. The Air Force is evaluating further automation at the base level (electronic distribution and "paperless manuals") as potential follow-on phases of ATOS.

Investment Cost: $63.6 million

Benefits

Annual savings do not offset the investment cost within 5 years. However, the Air Force significantly benefits from the investment by reducing the cycle for technical order change and distribution from about 240 days for an average change to a few weeks, with concommitant benefits in maintenance and safety.

distributed data base technology demonstrations). The payoff from these R&D investments will occur partly from reducing acquisition and support costs of lead weapon systems, but to a much greater extent through broad implementation in weapon system acquisitions and logistic system improvements in the 1990s.

CHAPTER II

OVERALL DOD PLAN

2.1 CHAPTER INTRODUCTION

This chapter describes DoD's plan to implement the recommendations of the Joint Industry-DoD Task Force on Computer Aided Logistics Support. The plan provides a strategy for step-by-step improvements in the capabilities of industry and DoD to (1) apply data automation technology to the problems of weapon system development and support and (2) acquire and use logistic technical information in digital form. The potential benefits are high in terms of improving support for weapon systems and increasing accuracy and reducing costs of technical data.

The Congressional mandate to reduce the use of paper as a medium for logistic technical information will be met in carrying out DoD's plan. Congress should be mindful, however, of the magnitude of this task. The paper-based logistic infrastructure that has existed in DoD and the defense industry in much the same form since the 1950s is extremely large and highly institutionalized. The technologies for integrated data automation are still evolving. The DoD plan aggressively pursues the objective of rapidly demonstrating and implementing these new technologies and capitalizing on them for support of new weapon systems. It also plots an evolutionary course for transforming DoD logistic technical information processes from paper to digital media.

2.2 CALS DEVELOPMENT STRATEGY

The development of CALS capabilities will be an evolutionary process. The starting point for the design and implementation of CALS consists of--

- Industry systems for computer aided design and engineering (CAD/CAE) that are in the process of being combined with those for computer integrated manufacturing (CIM); these systems currently perform few logistic functions and have very limited on-line R&M design input or analysis capabilities and inadequate data exchange capabilities.
- Industry logistic data automation efforts that have been largely self contained and heavily oriented toward satisfying multiple government requirements for paper products in unique formats.
- Government technical information repositories and distribution nodes that are in the process of transition to digital media.
- Government logistic management systems that employ largely paper-based input and output to perform a variety of highly compartmentalized functions.

To build from this baseline toward the required CALS capabilities, DoD will (1) review developmental projects already underway, and accelerate those with the highest leverage; (2) initiate new projects or modify current projects to fill gaps in capability; and (3) functionally integrate and network the resulting systems to gain large advantages over current separate and paper-intensive processes.

To achieve CALS capabilities requires development of data exchange standards and functional specifications, functional prototypes, technology demonstrations, and information system modernization in both DoD and industry. The Military Departments and Defense Agencies will manage their technical information system modernization programs in accordance with established policy and acquisition procedures. The DoD

Component and OSD CALS steering groups and management offices (see section 2.4) will review these modernization programs for compliance with CALS standards, schedules, and objectives. In addition, they will provide policy direction that will be incorporated into Department and Agency CALS implementation plans.

As noted, DoD and industry CALS applications will build from existing technology and data exchange standards. The Military Departments and Agencies will undertake additional technology development, demonstrations, and prototyping efforts, based on needs identified in the CALS implementation plans. DoD will develop, test, and demonstrate CALS data exchange standards with support from the National Bureau of Standards.

Initial architectural guidelines for evolving DoD and industry information systems are summarized in appendix B.

2.3 DoD CALS PLAN

The CALS program will be phased to accomplish a smooth and orderly transition from paper-based to automated logistic processes. Key implementation steps have been identified to carry out the guidance of the Deputy Secretary's policy memorandum. In addition, DoD has defined a progressive series of actions to achieve specific logistic functional capabilities in the future automated mode of operation.

2.3.1 Schedule and Milestones

A summary schedule is presented in figure 2.1. Detailed implementation schedules will be included in the Military Department/Agency implementation plans.

MILESTONES	1986	1987	1988	1989	1990	1991	1992
Key Implementation Steps							
1. Assign CALS management responsibilities	●						
2. Standards for data interchange							
- Product definition data	*-	◆---	----	----	----	----	---●
- Text and graphics	*-	◆---	----	----	---●		
- Database			*---	----	◆---	----	---▶
3. Functional specifications in weapon system contracts			*---	----	◆---	----	---●
4. Implementation of CALS standards and architecture in integrated DoD info systems			*---	----	◆---	----	---●
Functional Capabilities							
1. Engineering drawings							
- Automated storage/retrieval	◆---	----	----	----	---●		
- Centralized index locator system			◆---	---●			
- Standardized digital input to repositories	*-	◆---	----	----	----	----	---●
- Digital output to contractors for competitive spares buy			*---	----	◆---	----	---●
2. Technical publications							
- Automated authoring and publishing (paper output)	*---	---◆	----	----	---●		
- Digital distribution with print-on-demand output		*--◆	----	----	----	---●	
- Paperless technical manuals for maintenance	*-	----	----	----	----	◆---	---●
3. Spares procurement							
- Highly automated bid package generation		*-	◆---	----	---●		
- Digital interface with suppliers		*---	----	◆---	----	----	---●
- Limited "parts on demand" flexible manufacturing			*---	----	----	◆---	---▶
4. Maintenance							
- Automated design tools for improved R&M	*-	----	◆---	----	----	---●	
- Automated troubleshooting and field maintenance aids	*-	----	----	----	----	◆---	---●

Legend. - * Demonstration Project
◆ Initial Operational Capability
● Substantial Operational Capability

Figure 2.1. CALS Milestones

2.3.2 Schedule Objectives

Broad CALS objectives (keyed to the milestones in figure 2.1) are to:

1. Assign CALS management responsibilities within OSD and the Military Departments and Defense Agencies in 1986.
2. Develop and demonstrate a set of data interchange standards and validation approaches in 1986-1988. These will make engineering data repositories and automated technical manual systems work effectively by allowing direct input of contractor digital data.
3. Use lead weapon system programs in 1987-1989 to demonstrate contractor integration approaches and develop functional specifications for digital data acquisition in future contracts.
4. Implement these standards and specifications in weapon system contracts commencing in 1990.

As shown in figure 2.1, DoD will develop and implement functional capabilities for:

1. Engineering drawings and specifications (implementation of automated storage and retrieval in 1986-1990); digital inputs to and outputs from repositories demonstrated by 1988 and implemented in a phased manner thereafter.
2. Technical publications (print on demand by 1991).
3. Spares procurement (highly automated generation by 1990 of bid packages using digital product information, with optional digital outputs to bidders).
4. Maintenance (electronic maintenance data at depots in 1988 and at dispersed locations in a phased manner thereafter).[3]

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[3] Additional discussion of the scheduled milestones appears in appendix C.

2.3.3 CALS Demonstrations

DoD will sponsor comprehensive demonstrations of technical feasibility using Service and Agency test beds. The test beds will include a range of industry and government nodes for high-leverage logistic functional applications.[4] DoD and industry will use these demonstrations to establish and validate CALS technical specifications.

Functional user involvement and feedback will be a prime element of these demonstrations. Capabilities to be demonstrated include automation of--

- Diagnostics logic in design;
- R&M design rules and design analysis for a range of product classes;
- Production of technical manual text and graphics using CAD/CAE product definition data and updates in response to configuration changes;
- Production and update of logistic configuration and technical data used in procurement packages and automated procurement systems;
- Authorized access from remote terminals to contractor integrated logistic support databases;
- Maintenance troubleshooting assistance through user-friendly terminals with accurate configuration data; and
- Ordering and production of parts on demand through interfaces with flexible manufacturing cells in the industrial base.

Weapon system integration prototypes will integrate the discrete functional demonstrations performed on Service test beds into total programs for automation of logistic support planning and technical data development. These prototypes will apply R&M design tools at supplier and subcontractor levels as well as at the prime contractor level. They also will provide standardized digital linkages for product definition and logistic support data between suppliers and prime contractors and will provide complete digital technical data for DoD users.

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[4] Examples include industry CAD/CAE systems, integrated databases, flexible manufacturing cells, intelligent gateways, DDN and wide-area communications, government technical data repositories and automated publishing systems, and distributed government functional ADP systems and user terminals.

DoD weapon system integration prototypes, or "lead weapon system programs," will demonstrate exportable R&M design tools, data exchange standards, software, and functional design specifications for implementing CALS concepts on weapon system production programs in 1990 and beyond. A principal output will be the validated functional specifications, data item descriptions, and lists of contract data requirements to be used contractually on post-1990 weapon system acquisitions.

In general, the DoD test sites and development of specifications will be R&D-funded. Lead weapon system programs will provide funding for demonstrating system integration. Additional DOD CALS funding will be provided where required.

2.4 MANAGEMENT APPROACH

Each of the Services and the Defense Logistics Agency has either a senior (Flag Rank) CALS executive or an Executive Steering Group with broad responsibilities for implementation planning, approval of CALS programs, CALS implementation in weapon programs, funding coordination of CALS efforts, R&D planning, and CALS execution. Industry advisory groups are being established to coordinate industry CALS planning and implementation. (See Section 4.2.)

Figure 2.2 illustrates the CALS organization, which includes both industry and DoD participation.

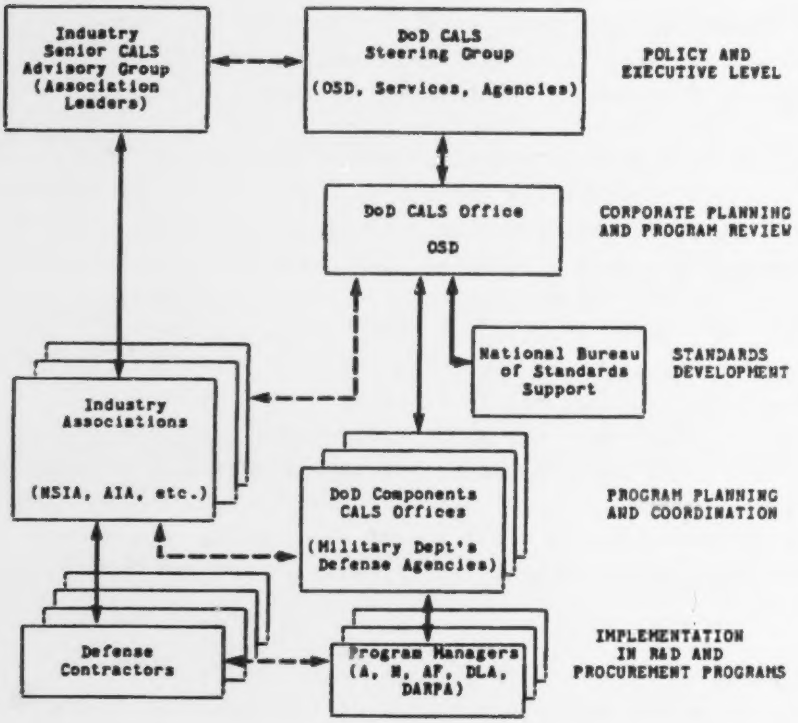
Industry Senior CALS Advisory Group (Association Leaders)
DoD CALS Steering Group (OSD, Services, Agencies)
POLICY AND EXECUTIVE LEVEL
DoD CALS Office OSD
CORPORATE PLANNING AND PROGRAM REVIEW
National Bureau of Standards Support
STANDARDS DEVELOPMENT
Industry Associations (NSIA, AIA, etc.)
DoD Components CALS Offices (Military Dept's Defense Agencies)
PROGRAM PLANNING AND COORDINATION
Defense Contractors
Program Managers (A, N, AF, DLA, DARPA)
IMPLEMENTATION IN R&D AND PROCUREMENT PROGRAMS

Figure 2.2. DoD CALS Organization

The DoD CALS Steering Group receives technical support from staff elements of the Office of the Secretary of Defense, the Services, the Defense Logistics Agency, the Defense Communications Agency, and the Joint Logistics Commanders.

The OSD CALS office, under the direction of the chairman of the DoD CALS Steering Group: (1) coordinates CALS integration efforts; (2) coordinates development of common data interchange standards; (3) develops evaluation documentation for Service program compatibility, commonality, and consistency; (4) provides an interface with industry; and (5) responds to Congressional interest in the DoD CALS program.

Each Service will establish an element responsible for overall funding coordination for all CALS activities and funding changes. The activities include: (1) compatible Service CALS nodes such as technical information repositories and automated publishing systems, (2) development and prototyping efforts for CALS elements and techniques, (3) test bed operations and analysis, (4) architecture planning, and (5) lead weapon system demonstrations. Funding requirements will be identified initially in the Service and Agency implementation plans. The Services and Agencies will update and submit funding requirements to the DoD CALS Steering Group every 6 months. The OSD CALS office will maintain files of all funding requirements and updates and other information relevant to the DoD CALS program.

In parallel with Service efforts to integrate and demonstrate current technology, DARPA will manage a technology demonstration program of high-payoff, higher-risk areas. This effort will initially consist of designing and testing software systems to provide a "parts on demand" interface with flexible manufacturing cells and procurement sources in the industrial base. Additionally, DARPA will support demonstration projects of Artificial Intelligence applications to item manager support, diagnostics development, and integration of R&M into CAD/CAE/CAM.

2.5 FUNDING

The President's Budget for FY 1987 included funding for a number of development and implementation projects that form the starting point for CALS. The Deputy Secretary's policy guidance on CALS, however, came late in the FY 1987 budgeting cycle.

Therefore, the FY 1988-1992 programming and budgeting cycle will be the first opportunity for a full DoD review of the CALS funding requirements that will be identified in the completed Service and agency implementation plans. Table 2.1 presents the funding for CALS projects included in the FY 1987 President's Budget. Footnotes are provided where additional CALS requirements are to be addressed in DoD's FY 1988-1992 programming and budgeting cycle; additional high priority needs will also be considered in FY 1986-87.

The OSD funding line shown in table 2.1 is for a new RDT&E-funded program element established in FY 1987 to support research, development, test, and evaluation of data exchange standards and architectural guidelines for CALS, as well as for integration demonstration projects. The OSD CALS office will manage this program, which is initially funded at $14.8 million annually. These funds will support efforts by the National Bureau of Standards to accelerate development and validation of CALS standards. They will also provide seed money for highly leveraged technology development and demonstration projects. Candidate programs for FY 1987 include establishment of an institute or consortium for integration of R&M tools into CAD/CAE design processes and several prime contractor demonstrations of CALS system integration.

Military Department and Defense Agency CALS funding in table 2.1 covers two major categories: (1) the development, demonstration, and prototyping of CALS integration technologies, and (2) the modernization of information systems to implement CALS.

The first category is funded primarily through RDT&E and O&M appropriations. Funds are allocated to develop CALS standards, systems architecture and integration, and functional demonstrations on CALS test beds and lead weapon systems. These

Table 2.1

CALS Funding
($ Millions)

DoD Component	FY-86	FY-87	FY-88
OSD	.0	14.8	14.8
ARMY			
CALS Development[1]	7.9	8.2	8.7
CALS Implementation[2]	25.9	15.4	32.5
NAVY			
CALS Development[3]	17.5	28.7	34.6
CALS Implementation[4]	35.4	44.3	40.4
AIR FORCE			
CALS Development[5]	21.1	33.3	35.5
CALS Implementation[6]	49.5	36.1	29.4
DLA			
CALS Development[7]	0.0	0.0	0.3
CALS Implementation[8]	0.0	0.0	22.1

Notes: (See Glossary, Appendix D)

1. Includes funds for the MEIDS, PEAM, JPAPS, APPS, and EMPS programs. Estimated additional requirements for the TD/CMS, EMPS, and CALS/TIMS programs would bring the total CALS funding requirements for this line in FY 86, 87, and 88 to $15.1M, 20.7M and 30.8M, respectively.

2. Includes funds for the DSREDS and 600S programs. Estimated additional DSREDS requirements would bring the total CALS funding requirements for this line in FY 86, 87, and 88 to $25.9M, 16.0M, and 34.6M, respectively.

3. Includes funds for the PEAM, CATIS, CBAT, RAMP, FEEDS, VLSI, CALSA, CAE Testability, IDSS, SSN-21, V-22, and SHARP programs. Estimated additional requirements for these programs would bring the total CALS funding requirements for this line in FY 86, 87, and 88 to $18.3M, 43.4M, and 58.0M, respectively.

4. Includes funds for the NAPPS, NTIPS, NSTIS, Ship CAD/CAM, Air CAD/CAM, GEMS, APADE, PED, SPLICE, EDMICS, NPODS, and TLRN programs. Estimated additional requirements for these programs would bring the CALS total requirements for this line in FY 86, 87, and 88 to $39.5M, 68.9M, and 112.1M, respectively.

5. Includes funds for the IDS, CMAS, UDB, IMIS, Reliability of Detection Models, GIMADS, MLCAD, IISS, GMAP, PDDI, ATI DEMO, CADBIT, SMARTBIT, RADC Testability Tools, and Testability Decision Tools programs. Estimated additional requirements for these programs would bring the total CALS requirements for this line in FY 86, 87, and 88 to $21.1M, 33.9M, and 44.3M, respectively.

6. Includes funds for the ATOS, EDCARS, LIMSS, and CALS MIO programs. Estimated additional requirements for these programs would bring the total CALS funding requirements for this line in FY 86, 87, and 88 to $50.6M, 39.6M, and 100.8M, respectively.

7. Estimated additional requirements for the DGIS program would bring the total CALS requirements for this line in FY 86, 87, and 88 to $0.0M, 0.3M, and 0.3M, respectively.

8. Estimated additional requirements for the CADESS, EDASRE, MPCASS, CADOSS, MEDALS, and CADQAD programs would bring the total CALS requirements for this line in FY 86, 87, and 88 to $0.0M, 0.3M, and 22.1M, respectively.

efforts are being coordinated by the OSD CALS office and its counterparts in the Services and Agencies.

The second category is funded primarily through procurement and O&M programs. Funds are allocated for acquisition and operation of the modernized information processing systems or services needed in an integrated CALS environment. Normal DoD automated system acquisition and management procedures will be followed in these modernization efforts.

2.6 REDUCING THE USE OF PAPER FOR TECHNICAL DOCUMENTATION

Support of weapon systems today relies on voluminous paper and microform images of paper pages as the primary information media. For example, DoD engineering data repositories currently hold an estimated 200 million engineering drawings, mostly in the form of 35-mm aperture cards. New weapon systems have shown exponential growth in the number of pages of technical manuals. Modern combat aircraft, for example, now require hundreds of thousands of pages of technical manuals. These two categories (engineering drawings and technical manuals) are the primary near-term targets of the Services' CALS automation efforts.

The transition from hard copy to digital media involves three major functions:

- Automating and integrating the production of data (e.g., through computer aided design or automated authoring systems);
- Storing and retrieving the data in digital form; and
- Distributing and using the data in digital form.

Automation of these functions typically will occur in four stages, as shown in table 2.2.

Table 2.2

Automation Stages

STAGE	PRODUCTION	STORAGE	USE
0	Paper	Paper	Paper
I	Paper	Digital*	Paper
II	Digital	Digital	Paper
III	Digital	Digital	Digital

* Scanned in from paper copy.

These four stages will coexist during the transition to full CALS implementation. Some applications may retain paper outputs indefinitely. Also, some small defense contractors may be unable to transition to a wholly digital environment. Reductions in the use of paper will be realized initially when a "print on demand" capability is acquired during Stages I and II. It will occur on a much larger scale when Stage III is implemented. For example, the Air Force estimates a 20 percent reduction in technical manual paper associated with ATOS automation of technical orders at the depot level, and a further 67 percent reduction when digital maintenance aids replace technical orders at the base level. Total elimination of paper, however, is unlikely. For many years to come, small manufacturing industries will require engineering drawings in paper or microform copy if they are to continue to participate in the DoD competitive bidding process. Similarly, until paperless technologies are proven in maintenance applications, users will continue to rely on hard copy technical manuals.[5]

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[5] Previous attempts to eliminate paper manuals by using microfiche and microfilm have proved unsuccessful.

CHAPTER III

DOD COMPONENT IMPLEMENTING PLANS

3.1 CHAPTER INTRODUCTION

This chapter previews the emerging CALS implementation plans of the DoD Components. Military Department and Defense Agency CALS implementation plans will be completed by July 1, 1986.

3.2 ARMY CALS PROGRAM

The Army has established the CALS/ATI Office as the Department of the Army (DA) Manager for CALS. This office will: (1) coordinate the existing Army Automated Technical Information (ATI) program; (2) continue with the development of an architecture for the CALS/TIMS (Technical Information Management System); and (3) establish a program to integrate Army initiatives in the development of reliability and maintainability (R&M) design tools.

The CALS/TIMS program represents the Army's foundation for implementing the DoD CALS program. It will integrate current and planned initiatives for automating logistic support technical information within the Army. CALS/TIMS development will be an evolutionary process to update the current Army system for acquiring, validating, storing, and disseminating logistic support technical information.

The initial phase of the effort, currently in progress, is documenting the current paper-based logistic support information system by surveying Army users to establish data flow patterns, demand rates, storage requirements, and usability criteria. This data collection and requirements analysis has produced a conceptual architecture for the implementation of CALS in the Army.

This effort is also currently developing specifications and a statement of work for the detailed design and implementation of a limited number of prototype CALS nodes and for demonstration of the Army's CALS/TIMS architecture. This initial implementation of the CALS/TIMS conceptual architecture will serve as a baseline and evaluation vehicle to guide the evolutionary implementation of a total integrated Army CALS capability.

The CALS/TIMS concept is a hierarchy of data bases, computers, and communications processors that are geographically distributed and capable of being accessed by multiple users performing multiple tasks. Information will be available, as required for real-time access on demand. The major thrusts of the Army CALS/TIMS program are--

- Implementing a near paperless logistic support technical information system;
- Providing a highly automated, functionally integrated capability for generating and processing logistic support information;
- Providing the distributed Army user with real-time, on line, transparent access to needed logistic support data;
- Networking and modernization of existing automated logistics support data bases;
- Converting high payoff paper-based systems to electronic formats and media.

The Army CALS program builds on the foundation of the Army Integrated Publishing and Printing Service (600S) and Digital Storage and Retrieval Engineering Data System (DSREDS) programs, both of which will begin to be implemented in 1986. The 600S program will establish centralized digital databases for the production and update of Army technical publications to eliminate the need for posting page-for-page changes in the field. High speed electronic updating capabilities will be employed to publish regularly scheduled revisions. The program will be implemented through contractor services so equipment will be neither purchased nor leased directly. DSREDS and its Air Force counterpart, EDCARS, will be implemented through a joint Army/Air Force acquisition program. The DSREDS/EDCARS program will --

- Provide repositories for digitally storing, retrieving, and reproducing engineering drawings and engineering documentation;
- Assemble drawings and other technical documents into technical data packages for procurement; and
- Provide technical data support to engineering and maintenance personnel.

The implementation of CALS initiatives within the Army falls within the guidelines of the Army Information Management Program (IMP). IMP is the Army's management process for identifying existing information resources, validating known information requirements, and providing a systematic approach for acquiring future resources. It includes both manual and automated systems. It also integrates and systematizes the information functions (applications, communication, data, equipment, and presentation) to provide Army decisionmakers at all levels with the best decision support system possible.

The Deputy Chief of Staff for Logistics (DCSLOG) has the Army Staff lead for CALS and serves as the Army functional proponent for CALS development. Prior to the CALS initiative, the Commanding General of the Army Materiel Command established the Communications-Electronics Command (CECOM) at Fort Monmouth, New Jersey, as the lead command to develop the Army's Technical Information Management System. The Army has expanded the CECOM role to cover the broader requirements of CALS.

The Army CALS program builds around the concept of maximum user participation to identify and evaluate potential technical data automation opportunities. Under the direction of the Army CALS Office, high leverage opportunities for automating technical information will be identified by functional user working groups. These opportunities will be evaluated by the working groups, and those offering the greatest payoff in both time and resources will be selected for full implementation in ongoing weapon system development programs.

Each candidate automation effort will be subjected to multiple levels of test and evaluation during the development process. The first level of test will be in the Army CALS R&D test bed, whose central node is planned to be located at CECOM.

Once this initial test and evaluation has been successfully completed, the automation candidate will be tested and evaluated on a mature or developing weapon system. Here, existing paper-based technical information will be converted to electronic media and processed in parallel with the nonautomated, paper-based system. On completing this phase, the Army will select an emerging weapon system and will conduct an additional evaluation throughout the development of this system.

The Army CALS implementation philosophy also includes continuous state-of-the-art upgrades and enhancements through technology insertion. The Army CALS architecture approach uses a modular design concept that facilitates these technology upgrades. The Army will provide incentives and otherwise encourage contractors to participate in a total Army CALS implementation effort. Because most technical information is generated by industry, it is very important that contractors be part of and actively participate in the Army CALS program.

3.3 NAVY CALS PROGRAM

The Navy has established a Senior Navy Steering Board for CALS implementation and has designated the Spares Competition and Logistics Technology Program Office (PML 550) of the Naval Supply Systems Command as CALS Coordination Office.

Navy programs already exist or are under development for automating logistic technical information, and for introducing advanced computer technologies to specific logistic functional applications. One of the foremost purposes of CALS is to integrate these programs for enhanced weapon systems acquisition and support.

Navy near-term CALS objectives include the development and execution of individual projects and programs to: (1) demonstrate technical feasibility and (2) determine the degree of standardization and integration required among the various efforts. The initial demonstrations are intended to exploit the increased use of computer technology in the following areas:

- Automating the generation, storage, indexing, distribution, and delivery of Navy logistic technical data.
- Developing and implementing a CALS information system architecture, including system and data standards, to integrate multiple initiatives.
- Automating low-volume spares manufacturing, including integration of flexible manufacturing cells in industrial environments.
- Coordinating and integrating computer-based tools for performing R&M analysis up front in the weapon system design process.
- Automating the engineering design process to provide weapon systems and facilities design engineers with on-line access to CAD/CAM data bases.

- Automating diagnostics and testing support by developing expert systems and standard hardware modules.
- Automating contracting and contract management processes to provide on-line access to multiple contract-related and logistic data bases, and reduce labor-intensive document preparation.

Near-term CALS demonstration projects include: (1) generic demonstrations to address common technology issues and (2) application demonstrations that focus on specific logistic functions. Existing Navy contracts for weapon systems and facilities will be used as vehicles for coordinating initial CALS demonstration efforts. This approach will leverage available financial resources by capitalizing on and exploiting contractor-generated digital information.

The SSN-21 attack submarine will be the lead platform for developing and demonstrating major portions of a total Navy CALS system. It reflects the full range of technology issues and diversity of industry capability associated with the shipbuilding environment. Ship design will incorporate advanced sensors, improved quieting, advanced combat systems, and weapon systems that provide a step improvement in combat effectiveness as compared with earlier classes of submarines. The SSN-21 is currently planned to be the largest dollar value ship class effort under Navy contract well into the 1990s. Moreover, the SSN-21 is the first submarine for which the Navy has tasked contractors to introduce producibility and enhanced maintainability as major considerations during the design process. The Navy intends to work closely with the Ship Production Committee of the Society of Naval Architects and Marine Engineers (SNAME) to integrate Navy-industry stand-alone systems during the demonstration and to produce validated generic functional specifications, interface standards, and architectural guidelines for expanded application. The effort includes front-end computer aided design, a complete system of technical information in digital form, and digital products for life cycle use in manufacturing, procuring spares, and preparing technical documentation (i.e., technical manuals, engineering drawings, and configuration control information).

Additional candidate acquisitions being reviewed for potential implementation of CALS include the DDG-51 and FFG-7 ship acquisitions, the V-22 aircraft acquisition, the CASS ATE acquisition, and standard facility and building designs such as TOMAHAWK magazines.

3.4 AIR FORCE CALS PROGRAM

The Air Force has created a CALS/ATI Management Integration Office (MIO) within the Air Force Systems Command. The MIO will provide a central mechanism for planning and coordinating the development and implementation of all projects directed toward automation of logistic technical information. Policy and guidance will be provided by and through the HQ USAF Deputy Chief of Staff for Research, Development and Acquisition, and Deputy Chief of Staff for Logistics and Engineering.

Authority to implement programs necessary to meet CALS objectives exists within the Office of the Secretary of the Air Force and Headquarters staff. This authority is expressly delegated to the MIO, including representing the Air Force in DoD-wide coordination activities and in the development of CALS specifications and standards. The present plan is to continue delegation of authority for project development and implementation to the commands that are principal users or have appropriate technical resources.

The current overall Air Force project for Computer Aided Logistic Support is divided into three major categories of effort: (1) implementation initiatives, (2) R&D initiatives, and (3) integration initiatives.

The first category consists of technical information management systems that are firmly committed and scheduled for installation or are already in the process of installation. These programs are now directly affecting the evolution of operational systems. Included are the EDCARS system for digital storage, retrieval, and distribution of engineering drawings and specifications. ATOS is included for automated storage, publication, distribution, and update of technical orders.

The second category consists of projects that are expected to lead to full-scale development, either to relieve current problems or to take advantage of emerging information and communication technologies. These projects range from technology assessments and directed experiments to "proof of concept" studies and demonstrations. The approach here differs from the traditional information system development process in that the outcome is dependent as much on the practical constraints of state-of-the-art technologies as on user needs. Additional requirements and constraints are imposed by the use of commercial hardware, development of communications networks, and evolution of automation within the defense industry.

The third category of projects has been initiated by the Air Force to develop specifications and standards and to establish architectural plans for future systems. These integration projects are intended to achieve a maximum practical level of interchange among systems. They support the ongoing evolution of systems with essential interchange rules and formats, and they also establish objectives for compatibility of hardware, software, and communication protocols in future systems.

3.5 DEFENSE AGENCY CALS PROGRAMS

3.5.1 Defense Logistics Agency (DLA)

DLA is establishing a CALS Office within its Office of Telecommunications and Information Systems that will coordinate the planning of all special projects associated with the DoD CALS Program. The office will also oversee other specially assigned projects for automating and distributing technical information within the Agency.

In addition, a DLA CALS Steering Group is being established to:

- Provide oversight and guidance in the planning, programming, budgeting, and development of DLA CALS projects;
- Evaluate proposals for new programs/projects or changes in supporting CALS services, operational policy, priorities, funding, and organization; and
- Evaluate the resource implications of proposed CALS programs and recommend appropriate actions to the Director, DLA, Headquarters Principal Staff Elements, and the DLA Systems Automation Center to ensure continuity of system development and implementation.

Several factors will make DLA's role in meeting readiness and sustainability goals for the U.S. Military more critical than in the past. One such factor is the advance in the technology and complexity of weapons systems. Another is the anticipated increase in the number of weapon systems and component items supported by the DLA logistic system. A third is the trend toward more standardization and interoperability between the U.S. and its military allies, especially NATO members.

Extensive, up-to-date logistic technical information will be required from multiple systems in and outside of DLA.

Current high-cost manual activities requiring long lead times to cross check information between the Military Services and DLA and between DLA and vendors before updates are made must be replaced by high-speed, real-time data/information processing capabilities.

The DLA CALS Program, together with the DLA Logistics System Modernization Program, will play a vital role in improving DLA's capability to manage logistic items and exchange information with other elements of the U.S. logistic community and the allies.

The DLA Logistics Systems Modernization Program (LSMP) will stress the use of standard functional modules to eliminate system duplication, improve reliability and maintenance, support interfaces and interoperabilities, and expedite implementation schedules. Databases will be designed and developed to meet multiple user requirements.

The DLA CALS architecture will interface with and interconnect existing and future automated technical information systems through the use of current and improved DoD telecommunication resources. Existing systems and data repositories will be served by a modern array of CALS telecommunication capabilities. This array includes the Engineering Drawing Automated Storage & Retrieval Equipment project and modernization projects such as the Parts Control Automated Support System and the DLA Minicomputer System. These telecommunication components are included within the overall DLA architecture for the Logistics Systems Modernization Program and will provide an interoperable processing environment for DLA in support of the Military Services and industry.

3.5.2 Defense Communications Agency (DCA)

The DCA-managed Defense Data Network (DDN) will be used as the basic data communications base for CALS. DCA will help ensure that appropriate communication capacity is available to support CALS development and will advise the CALS Steering Group on the most efficient and effective ways to support CALS communication requirements.

CHAPTER IV

IMPERATIVES FOR SUCCESS

4.1 CHAPTER INTRODUCTION

This chapter discusses issues that are likely to influence the success of the CALS initiative. These include the interface with industry, data exchange standards for system compatibility, reliability and maintainability integration into CAD/CAE, and cost.

4.2 INDUSTRY INTERFACE

Achieving the objectives of the CALS program will require concerted planning and investment by both government and industry. The DoD's CALS program is based on a joint Industry-DoD study of common opportunities and concerns. Success depends not only on integrating initiatives bearing on government logistic technical information initiatives but also on creating a unified DoD interface with industry. This interface can best be achieved by establishing relationships between the DoD CALS Steering Group and industry associations such as the National Security Industrial Association and the Aerospace Industries Association. The Chairman of the DoD CALS Steering Group has requested that the National Security Industrial Association provide the leadership and coordination effort for an Industry Association Working Group.

Beyond formal DoD-industry interfaces such as this, the DoD CALS program seeks the widest possible dialogue with industry. This dialogue must include both large and small contractors--primes, subcontractors, suppliers, and vendors.

DoD intends to pursue the widest possible dialogue on CALS with interested parties in industry, and the broadest participation of industry in developing, testing, and implementing CALS concepts.

4.3 STANDARDS FOR SYSTEM INTERFACING AND COMPATIBILITY

The computer technology explosion over the last several years has created such a wide range of incompatible systems that data interfacing is a major problem for both industry and government. There is widespread recognition of this problem, and many private and public groups are already working to deal with it. Developing, testing, and validating standards in the private sector, however, is a slow, voluntary, ad hoc process. Industry implementation of the standards is also voluntary. The size and scope of DoD's weapon system acquisition program gives the government substantial leverage to accelerate this important process to bring about industry standards that meet the technical and schedule needs of CALS.

DoD is committed to developing a capability to exchange data among heterogeneous systems. This requires intensive management. Capability for fully automated transfer of product definition data and other logistic technical information without manual intervention will take several years to develop and implement.

The CALS program will develop, validate, and implement neutral interface standards for a spectrum of data types and logistic applications.[6] Implementation of data translators between internal system formats and the standard format is a host system responsibility, but DoD actions will be needed to accelerate the development and validation of such translators.

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[6] "Neutral interface" implies an open-ended arrangement that allows individual user systems to function in their own peculiar hardware and software environments so long as data can be transferred to other nodes in a standard format and with standard protocols. This creates system compatibility without requiring hardware or software standardization.

DoD will use or adapt industry standards to the maximum extent feasible. Three such standards--the Initial Graphics Exchange Specification (IGES), The Consultative Committee on International Telephone and Telegraphy (CCITT) Group 4, and the Standard Generalized Markup Language (SGML)--have already been selected for initial application as CALS standards. IGES will be used for transfer of: CAD designs, engineering drawings, and vector graphic illustrations for technical publications; CCITT Group 4 for rasterized drawings and illustrations; and SGML for preparing and automatically publishing technical documentation text.

Initially, CALS demonstrations, using these industry standards, will test several approaches for interim data exchange. Tradeoffs to achieve the best economy and accuracy will be assessed using selected acquisition programs while the standards are refined and extended.

The National Bureau of Standards (NBS) has been given a statement of work and funding to support the DoD CALS program in two areas: (1) selecting and developing a complete set of data exchange standards, and (2) developing validation procedures for the complete range of graphics, text, and database applications in logistics. DoD and NBS have established a 4-year program to develop a complete set of data exchange standards to be implemented for weapon systems entering production in 1990 and beyond. Plans are also being developed for NBS to support DoD in developing an overall DoD architecture, functional specifications for information transfer, and information modeling technology.

Technical issues in standards development will be resolved through R&D-funded tests and demonstrations in each Service.

Concerted DoD, NBS, and industry efforts will be needed to accelerate the development of selected standards to meet the DoD schedule for production implementation. The Services and Agencies will develop specifications employing these standards that will, in turn, be coordinated with industry and reviewed by National Bureau of Standards. DoD CALS standards and validation approaches will be approved and adopted through the Defense Specifications and Standards Program.

4.4 RELIABILITY AND MAINTAINABILITY

The defense industry must be able to design complex weapon systems that are reliable and relatively easy to maintain. That objective is central to CALS.

One of the areas of greatest potential leverage in the CALS program is fostering the development of automated R&M design ~~tools~~ and their integration into computer aided design and engineering (CAD/CAE) processes and systems. At present, a significant portion of the defense industry is using some form of computerized R&M analysis in developing subsystems and equipments. These applications, however, are primarily collections of individual stand-alone techniques. Very few are integrated among themselves or with CAD/CAE, and fewer still are integrated with the preparation of logistic data. CAD/CAE systems also lack interfaces with the logistics environment that would facilitate use of experience data for performing R&M analysis; hence, data on R&M field performance of operational systems are difficult for designers to access for comparative analysis.

In addition to the obvious benefits of integrating R&M into CAD/CAE such as higher reliability and better maintainability, the use of digital techniques will produce cost benefits. A recent National Security Industrial Association study identified some of these that are directly related to early identification of potential performance and assembly-line problems through use of R&M tools in CAD.

Several technical problems must be solved to facilitate integration of R&M into the automated design process, including: (1) establishing standard interfaces for R&M inputs to CAD, (2) providing access to multiple data sources, (3) transforming fielded system R&M data into appropriate design inputs, (4) developing design analysis tools and design rules for use with limited data, and (5) developing design interfaces with automated logistic processes. Resolving these problems is a large undertaking. DoD is evaluating alternative approaches to provide the required technical management and coordination.

CALS lead weapon system program prototypes (1986-1989) will apply design tools at prime and subcontractor levels and will link CAD/CAE to the generation of logistic technical information. Design tools and function specifications developed and refined during prototype development will be exportable to other weapon systems to quickly gain benefits from CALS implementation. Additionally, active consideration is being given to establishing a DoD institute or consortium as a vehicle for coordinating research and accelerating technology transfer.

4.5 COST

The funding levels discussed in Chapter II will not implement a full CALS program, but they will start the process. Some payoffs have already materialized through R&D demonstration projects and other automation efforts. Substantial payoffs, however, will require broad implementation throughout DoD and industry.

The major concern is that the program be completed. It would be easy to defer CALS resources to other pressing needs in a constrained budget environment. If CALS implementation is delayed, the CALS payoff will be delayed. In a program of this nature, it is important to develop a long-range plan, and to continue working steadily throughout the implementation period.

Innovative approaches for leveraging available financial resources and industry interest need to be pursued to expedite CALS implementation. The need not only for rapid demonstration but also for transferring emerging technologies for R&M analysis, system integration, and data exchange suggest that some form of institute of consortium would be a vital force for accelerating the widespread dissemination of capability.

CHAPTER V

CONCLUSIONS

5.1 CHAPTER INTRODUCTION

This chapter summarizes the benefits and potential problems associated with CALS, emphasizes the need for Congressional assistance, and presents conclusions.

5.2 BENEFITS

DoD and Congressional reports have pointed out the significant payoffs to defense logistics through improved management of acquiring and using technical information. The Joint Industry-DoD CALS Task Force described how using new and emerging computer technology can improve weapon system support, from initial design to operational logistics.

Implementation of the CALS program will result in --

- Improving the ability of industry to design supportable weapon systems through integration of R&M design rules and design analysis in an on-line computer aided design and engineering (CAD/CAE) environment;
- Improving the ability of industry to produce weapon systems using computer aided technologies such as computer integrated manufacturing (CIM) by applying data exchange standards and system integration technologies;
- Improving the creation by industry and acquisition by DoD of logistic technical information by applying and integrating data automation techniques and standards;

- Improving the accuracy, timeliness, and utility of logistic technical information used for critical logistic processes; and
- Improving operational weapon system support as automated logistic technical information is used for configuration management, design change, maintenance, inventory control, and procurement.

These improvements will --

- Reduce weapon system acquisition costs;
- Increase productivity and reduce cost of logistic support throughout weapon system operational life; and
- Enhance operational readiness of military forces.

5.3 POTENTIAL PROBLEMS

The CALS initiative seeks to transform an immense paper-based infrastructure in DoD and industry. Decades of operational experience and billions of dollars are embedded in current modes of operation. These will not change overnight. Both technical and managerial challenges will be great.

The salient issues include standards, architecture, management, and funding priority.

5.3.1 Technical Issues

- Standards

Developing a comprehensive set of standards for exchange of technical data in a heterogeneous automation environment will require intense, concerted management. DoD's requirement is for 100 percent transfer of a technical document with minimum manual intervention to verify the completeness of data exchange. In areas such as engineering drawings, this capability is at the leading edge of technology.

- Architecture

Cost-effective choices must be made in defining the forms in which data will be used to perform logistic functions in the future, and in developing and interfacing heterogeneous database architectures and communication networks to fit those uses. The need to accommodate disparate hardware and rapid technological growth, and still provide a unified DoD-industry interface, is a challenge of substantial proportions. Although large-scale data bases are now being implemented by many defense contractors, as well as throughout DoD, the technology for compatible access and exchange of data among those data bases is still in its very early stages. Transparent query techniques, near real-time data retrieval and updating, and data management procedures require substantial additional research and development for CALS applications.

- Data security

The concept underlying the CALS program is to integrate weapon system product definition and configuration management data using advanced distributed data processing and telecommunication technologies, with secure access for authorized users. Some of this data may be classified; some may be unclassified, but proprietary. Some of the data may be unclassified when considered on a data element by data element basis, but would become classified or sensitive when aggregated at the weapon system level. Whether unclassified, classified, or proprietary, there must be controls over who has authority to change, update, or release the data. Existing technology for these functions must be extended and validated before full-scale implementation. Use of industry standards may even be an impediment here, since it may not be possible to incorporate some DoD communication security requirements in them.

5.3.2 Management Issues

- Functional management

  Hundreds of DoD and industry organizations will be involved in the CALS transition. New user-specific, incompatible data systems have been proliferating at an exponential rate. To impose CALS integration disciplines on these efforts without unduly delaying or degrading user responsiveness, to eliminate unnecessary redundancy, and to manage CALS investments prudently is a major challenge. To do so in DoD's decentralized management environment will require the continued attention of DoD's top management; the OSD CALS office is an essential element in this process.

- Data ownership and liability

  The more widespread data access becomes, the more important questions of ownership and custody become. The more data becomes available in processible form (e.g., a stream of text instead of a composed page), the more crucial become questions of responsibility, authority for change, and secondary data uses. Industry recognizes, and is voicing concern that emerging automation technology may outpace necessary changes in contracting procedures and management processes for electronic data. Use of electronic data and computer technology will affect the structure of the defense industry and the relationships of its various segments. Industry support for CALS depends on a balanced approach that rewards innovation, and at the same time makes the appropriate data available for competitive purposes.

- Funding priority

The large scale transition to an automated and integrated mode of operation will require substantial investments by DoD and industry. A down payment has been made over the past ten years, but the rate of investment must increase in fiscal year 1987 and beyond to reach the target capabilities forecast for the 1990s. These investments will be evaluated on the basis of cost effectiveness, and will compete with other essential requirements in DoD's Planning, Programming, and Budgeting System (PPBS). Continued high priority and support by DoD's top management will be needed to realize the potential of CALS.

- Congressional support

Attainment of CALS objectives will depend, in large measure, on sustained congressional interest and support. During periods of increasingly tighter funding, long-range programs such as CALS sometimes fall casualty to short-term budget constraints. Sustained CALS funding is essential to achieving its program objectives. Cost savings and improved capability can be achieved only if the required investments are made and substantial changes are effected in defense logistic support processes.

APPENDIX A

MEMORANDUM FROM THE DEPUTY SECRETARY OF DEFENSE

SUBJECT: COMPUTER AIDED LOGISTICS SUPPORT

SEPTEMBER 24, 1985

THE DEPUTY SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

24 SEP 1985

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
DIRECTOR, DEFENSE COMMUNICATIONS AGENCY
DIRECTOR, DEFENSE LOGISTICS AGENCY
DIRECTOR, DEFENSE ADVANCED RESEARCH PROJECTS AGENCY

SUBJECT: Computer Aided Logistic Support

The DoD-Industry Task Force on Computer Aided Logistic Support (CALS) has recommended action to achieve major improvements in supportable weapon system designs, and to improve the accuracy, timeliness, and use of logistic technical information. To effect these improvements, I have approved a strategy for transitioning from our current paper-intensive weapon system support processes to a largely automated and integrated mode of operation with substantial progress by the end of this decade. It is my goal that the Department of Defense (DoD) will establish plans to acquire, process, and use logistic technical information in digital form. Insofar as possible, this shall be accomplished for new major weapon systems entering production in 1990 and beyond. Major weapon system new starts, development, and modification programs should begin to develop this acquisition strategy immediately.

Our strategy requires concerted planning and investment by both government and industry. The objectives are to:

- Accelerate the integration of reliability and maintainability (R&M) design tools into contractor computer aided design and engineering (CAD/CAE) processes. DoD will encourage priority industry implementation through contract requirements, incentives for industry investments, competitive source selection criteria, and research and development (R&D) programs to develop and demonstrate improved on-line R&M design tools, including interfaces with automated supportability design criteria, standard parts lists, and other CAE tools.

- Accelerate the automation of contractor processes for generating logistic technical information products (technical manuals, training materials, reprocurement technical data packages, and other product definition data). This is primarily an industry responsibility that DoD will facilitate by implementing contract data requirements oriented toward the transition to automated technologies, and by exploring contractual arrangements that reward investments in cost-effective automation and integration technologies.

- Rapidly increase Military Department and Agency capabilities to receive, distribute, and use logistic technical information in digital form to improve weapon system maintenance, training, and spare parts management. DoD will give high priority to the planning, management, standardization, technology, and data system modernization efforts needed to make substantial progress toward achieving this objective within five years.

I am establishing a steering group, with membership at the Deputy Assistant Secretary level within the Military Departments, to oversee implementation of this program. Further implementation guidance is enclosed. The steering group will report to the ASD(A&L) quarterly on the actions taken and progress made in fulfilling the program objectives. The ASD(A&L) has selected Mr. Russell R. Shorey, Director of the Weapon Support Improvement Group to chair the steering group. Please forward to Mr. Shorey within thirty days the names of your nominees for steering group membership, and provide an implementation plan within 120 days that includes assignment of overall coordination responsibility within your Department or Agency, and your schedule for program implementation.

William H. Taft, IV

Enclosure

CALS IMPLEMENTATION GUIDANCE

The CALS Implementation Steering Group will oversee the development of DoD, Military Department, and Agency implementation plans for establishing a unified interface with industry for the exchange of information in digital form, and will provide overall coordination of other implementation actions. Each DoD Component will develop implementation plans that best meet its needs within this coordinated framework.

1. Development of a Unified DoD Interface with Industry

Data exchange standards are critical to the implementation of the CALS recommendations. Long term and near term standardization efforts will be undertaken in parallel.

- The Defense Materiel Specifications and Standards Office (DMSSO) will prepare, within six months, a program plan for a DoD-wide integrated set of standards for exchange of logistic technical information in digital form. The program plan will provide the road map for development, adoption, validation, and implementation of an integrated set of standards to support transition to digital data across a broad range of user applications, including the need for data exchange standards applicable to electronics systems. DoD will work closely with the National Bureau of Standards, other Federal agencies, the American National Standards Institute, and industry and professional associations in this effort.

- The Air Force will lead a joint task group to define, within six months, the application of interim data exchange standards to all engineering drawing repositories and to automated publishing and distribution systems. Each Military Department and Agency will appoint a representative to this task group within 15 days. Interim standards will include, at a minimum:

  -- Initial Graphics Exchange Specification/Product Definition Exchange Specification (IGES/PDES)

  -- Standard Generalized Markup Language (SGML)

2. Military Department/Agency Implementation Tasks

The Military Departments and Agencies will develop implementation plans which include schedules, funding, and responsibilities for implementing the CALS objectives and applicable CALS Task Force recommendations. These plans will place particular emphasis on the following tasks:

- The designation or establishment within the Military Departments and Agencies of a central organization with broad responsibility for all aspects of CALS implementation, including information system architecture, information exchange standards, and resource oversight of related data automation modernization and demonstration projects.

- Comprehensive plans for modernization of government information processing capabilities, commencing with key logistic technical information repositories, communication nodes, and publishing centers, to achieve an early capability to accept, process, access, and distribute contractor logistic technical information in electronic form.

- Establishment of a schedule with specific milestones for revising applicable military specifications and standards to provide for acquisition of logistic technical information in digital form. First priority during the next two years should be given to specifications and standards for engineering drawings and technical manuals. The interim data exchange standards identified above will be included in near term implementation of these specifications to facilitate hardware independence.

- Implementation of demonstration projects over the next four years in which engineering drawings, technical manuals, and logistic data for selected weapon systems and equipment will be created, stored, distributed to DoD users, and updated using electronic formats. The demonstrations will emphasize data integration, and will be structured both to demonstrate the advances possible in the performance by government and industry of specific logistic functions, and to validate user requirements for future system design. Data exchange standards, common data element formats, component designation/reference numbering techniques, communication requirements, safeguards for classified and proprietary data, and other issues developed in the CALS recommendations should be explored through these demonstration projects.

- Review of current new weapon system acquisition programs to take advantage of near term and long term automation opportunities for the production, delivery, and use of product definition data and logistic technical information. All new major weapon systems approaching production by the end of this decade or beyond should be reviewed now, and plans and contract requirements should be structured for receipt and distribution of logistic technical information products in digital form. Less-than-major systems should follow this lead to the extent feasible.

- Identification of long haul communications and wide area networking requirements for CALS implementation. The Defense Communications Agency will review peace and wartime requirements with the Military Departments and Agencies, and will plan to include the necessary capabilities in the Defense Data Network (DDN).

- Establishment of a technology development program. The Defense Advanced Research Projects Agency will work with the Military Departments and Agencies to identify and prioritize technology issues associated with CALS implementation, including a Computer

Integrated Manufacturing (CIM) interface, and will develop a technology research and development program to support accelerated improvements in CALS capability.

3. Creating Incentives for Industry

Contractual arrangements, investment incentives, and additional funding that encourage and facilitate industry's adoption of new and emerging data automation technology for weapon system design and support are crucial. OASD(A&L), with Military Department support and industry involvement, will review existing investment incentives for both large and small companies, and develop recommendations for modification to support CALS objectives. Each Military Department will implement source selection criteria, contract requirements, and investment incentives that:

- Promote the modernization and integration of industry automated systems that generate logistic technical information to improve their efficiency, accuracy, and timeliness.
- Promote the integration of R&M design and analysis tools as on-line elements of the computer aided design and engineering process.
- Structure incentive programs, such as the Industrial Modernization Incentives Program (IMIP), to encourage industry investment and dissemination of capability in these areas.

Progress in contractual implementation will be evaluated in Defense Systems Acquisition Review Council (DSARC) and Military Department acquisition program reviews. Proposals for further technical advances in this area will be given priority in allocation of R&D resources and in independent research and development (IR&D) reviews.

APPENDIX B

CALS ARCHITECTURAL GUIDELINES

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CALS ARCHITECTURAL GUIDELINES

The evolving DoD and industry system architectures for CALS must meet the following conditions:

a. Industry and government nodes must be able to communicate without restriction to specific hardware and application software. To achieve this degree of compatibility will require comprehensive data interchange standards that are only partially developed and implemented today. The DoD architecture for interfacing with industry will be defined by validating and implementing available standards and by rapidly developing and validating additional industry standards to meet CALS application needs.

b. Interim solutions must be implemented in such a manner as to make the transition to a fully automated hardware-independent mode cost-effective and expeditious.

c. Each Military Department and Defense Agency will develop an architecture to meet its specific user needs. However, these architectures must adhere to DoD approved data interchange standards and conventions to provide a common, compatible interface with industry. Service-peculiar functional requirements will be defined to take advantage of the availability of integrated, distributed data bases and integrated industry processes for developing and updating logistic information. In areas where multi-Service needs can be met by specifying common functional requirements, with advantages in the cost of data generation or support software, the Services will develop common functional specifications.

d. DoD (and industry) will determine which hardware and software approaches best fit application needs. Industry will rely primarily on its own software development for integrating R&M into CAD/CAE and for integrating logistic data processing with design and manufacturing. Government furnished or public domain software packages will be available for some functions. For common DoD-wide CALS functions, common hardware will be procured to minimize duplicative development overhead and to gain quantity pricing advantages. The need to maintain competition and to keep up with technological advances will be balanced against the advantages of common hardware. Options for neutral data exchange will be maintained to take into account both state-of-the-art improvements and the economics of user applications.

e. DoD component architectures will provide for neutral query formats and data base transparency. That is, an authorized user will not need to be aware of data base location(s) and structures in order to access required information. Building on the existing DoD data element standardization and Defense Specifications and Standards programs, DoD will define and standardize a logistic database dictionary that will be available to industry for structuring their systems.

f. An interface with flexible automated manufacturing will be provided through use of product definition standards that include sufficient data to compete, contract for, and manufacture operational product families.

g. The Defense Data Network (DDN) and Open System Interconnection (OSI) seven layer model will be used for communication standardization, and supplemented as needed. Bridges to industry networks such as the Manufacturing Automation Protocol (MAP) will be developed and implemented.

APPENDIX C

DISCUSSION OF CALS MILESTONES

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DISCUSSION OF CALS MILESTONES

C.1 INTRODUCTION

This appendix provides additional information on the CALS milestones outlined in chapter II.

C.2 KEY IMPLEMENTATION STEPS

C.2.1 Develop Standards for Data Exchange

Interfacing operational DoD systems with the automated systems used by defense contractors to create engineering drawings and technical manuals is an essential step in establishing compatibility among the systems that process logistic technical information. The DoD engineering data repositories and publishing systems being implemented already incorporate a capability to handle digital contractor data. Where cost-effective, these system-unique digital interfaces will be implemented as soon as the systems themselves are operational. Concurrently, DoD-wide data exchange standards are being developed, demonstrated and validated, and implemented to provide common interfaces and create system capability.

The primary near-term data interchange activities required to achieve a unified DoD interface with industry involve:

- Designating interim standards for electronic publishing and technical data repositories (third quarter 1986);
- Selecting a more complete initial set of industry standards for product definition data, computer graphics, text, and database applications (first quarter 1987); and

- Refining interim standards and demonstration of the reduction of manual data validation requirements to near zero (fourth quarter 1987).

The interim standards will be demonstrated in test beds and lead weapon system programs during 1987-89. They will be implemented DoD-wide in new weapon system contracts beginning in 1990. Based on work in support of CALS by the National Bureau of Standards (NBS) and on lessons learned from the demonstrations and prototypes, the interim standards will continue to be refined and extended to support fully digital DoD product definition and configuration management databases in the early 1990s. These functional applications will require that DoD, with NBS advice and assistance, select a broad set of standards for accelerated development and implementation. These include (1) advanced text and graphics standards (1987-1990) for compatible processing of technical documentation, and (2) database and neutral query language standards (1988-1992) for interfacing with and access to distributed data bases of logistic technical information.

Use of these same standards as DoD output to industry is tied not only to the development process outlined in the preceding paragraph but also to the evolving capability of receiving systems in industry to accept data in those formats. For example, in today's environment, engineering drawings included in bid package sets are usually distributed in aperture card format. Initially, the principal output medium from automated engineering drawing repositories will continue to be aperture cards.

Many contractors will still convert these aperture card packages back to paper for in-plant use. Through the demonstrations and prototype development undertaken during 1987-1989, DoD will encourage defense contractors not only to create and deliver logistic technical information to DoD in digital form, but to accept it from DoD in that form as well.

An initial examination of needs and existing capability indicate that by 1990 the defense industry could implement rigorously defined and tested standards for product definition data. Comparable schedules are projected for standards needed for database applications and computer graphics, and for integration of numerous industry standards that are presently being developed by different user communities.

We expect to see meaningful amounts of digital technical information output from DoD to industry beginning in the 1989-1991 time frame. This data will be used initially for "traditional" functions, such as re-procurement bid packages, and then for design changes and flexible manufacturing functions as the decade progresses.

C.2.2 Implement CALS Standards and Architecture in Integrated DoD Information Systems

During 1986, the Army and Air Force will jointly implement an operational system[1] to store and retrieve digital engineering drawings that are presently stored in manual or semi-automated aperture card repositories. Digital interface standards for system compatibility and for contractor delivery of engineering drawings will be implemented as they are developed and demonstrated.

Navy and DLA automation programs will, in the initial phases, improve the management of aperture card repositories, and will acquire a fully digital capability similar to and compatible with the Army and Air Force approach by 1990. DoD's engineering drawing locator system will be implemented during this same period to provide DoD and industry users with improved visibility and control over the 200 million total engineering drawings presently stored in DoD repositories.

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[1] The Army Digital Storage and Retrieval of Engineering Drawings System (DSREDS) and the Air Force Engineering Drawing Computer Assisted Retrieval System (EDCARS).

Also during 1986-1990, the Military Departments are planning to establish automated technical manual and technical order systems[2], as described in Part II of this report. Both automated paper copy publishing capabilities and digital distribution with print-on-demand capability will improve the management of technical manual updates and serve as an initial step toward eventual near paperless technical documentation.

These systems incorporate capabilities such as optical character recognition and raster image scanners to capture hard copy input digitally. The data interchange standards being developed and demonstrated during this same period will provide a capability for automated publishing systems to accept contractor digital input directly in a form that can be used either to re-create a page image or to create tailored information for a variety of functional applications.

Implementation of automated publishing systems in DoD will make electronic distribution of page-image technical manuals to base-level maintenance technicians a reality by 1988 or 1989. However, the traditional page-image format may not be the best way to communicate information in an automated environment. Logistic research and development projects now under way will restructure the digital page-image manual into tailored job-guide format, and make that information transportable to maintenance personnel in the field. These projects will provide an operational capability between 1989 and 1992.

Actions to modernize DoD's technical data repositories and distribution systems were initiated before the CALS program was established. They represent the baseline from which the overall architecture for improved management of logistic technical information will evolve. Near-term CALS emphasis is being placed on the common data exchange standards that are the primary tools for creating fully compatible industry and DoD systems. Concurrently, as part of their CALS implementation planning, DoD components are defining how this system baseline will evolve into the architecture for integrated processing and use of logistic technical information. That architecture will be demonstrated and implemented concurrently with the incorporation of CALS concepts in new weapon system programs.

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[2] Army AIPPS/600S, Navy NAPPS, and Air Force ATOS.

Although individual CALS capabilities will be implemented as quickly as technical feasibility can be demonstrated, the acquisition strategy of CALS is to incorporate the production and use of digital logistic technical information as an integral part of new weapon system programs. Based on the prototype efforts undertaken in 1987-1989, these capabilities will be incorporated in a substantial number of weapon system production programs commencing in 1990. Logistic technical information delivered to DoD (or maintained by industry for DoD) under these production programs will be structured into digital configuration management databases, and will be distributed and used in digital form within DoD in lieu of paper-based data beginning in the early 1990s.

C.3 FUNCTIONAL CAPABILITIES

As data exchange standards mature and communication networks for electronic data distribution are extended, digital technical information will be used more and more extensively by both DoD and industry. This use will improve the productivity of logistic functions now severely constrained by paper-based weapon system support processes. Functional uses of CALS (such as for highly automated provisioning and procurement) will be demonstrated as part of CALS weapon system integration prototypes in 1987-1989. They will be progressively extended to other weapon system production programs based on functional specifications developed as part of the prototype efforts.

A fundamental objective of converting from paper-based to digital weapon system support processes, in addition to improving the productivity of internal DoD logistic functions, is to enhance follow-on support functions performed by industry with the use of digital technical information. The Navy currently has a research and development project under way that will demonstrate the feasibility of integrating "flexible on-demand manufacturing of spare parts" technologies through the use of digital product definition design models.

Demonstrations of these technologies during the late 1980s, supported by concurrent development and demonstration of product definition data standards, will provide the baseline for using digital media for re-procurement and flexible manufacturing of spare parts beginning in the early 1990s. Source data for this application--the digital product definition design models of spare parts--will be acquired by DoD as the implementation of CALS concepts occurs in post-1990 weapon system production programs.

Engineering design changes and modification programs for current weapon systems will also rely on implementation of CALS concepts. Near-term CALS objectives include digital delivery from defense contractors to DoD of design change technical data. Longer-term CALS objectives (post-1990) include using digital product definition and logistic technical information in either DoD or industry configuration management databases as source data for accomplishing design changes and modifications. This includes on-line R&M analysis, design models of standard parts, and performance and maintenance experience data. Similarly, future generations of weapon systems will be able to use current system technical data in digital form for such purposes as trade studies, comparative analysis, and lessons learned.

C.3.1 Demonstration Programs

Each of the operational capabilities to be implemented as a part of CALS requires testing, demonstration of technical feasibility, and prototypes. This section describes the conceptual schedule for these efforts. It explains how CALS capabilities will first be demonstrated individually then merged into a fully integrated process.

During 1986 and 1987, initial phased demonstrations will focus on the capability to exchange and access logistic data between industry databases and government nodes to perform selected logistic functions. These demonstrations will include operational tests with computer aided design (CAD) and automated systems from several vendors.

From 1987 through 1990, there will be progressively more integrated demonstrations and prototypes involving prime contractors and subcontractors on designated lead weapon systems. These will include functional demonstrations of the integration of R&M into CAD/CAE, and of increased automation of logistic data products. Specific examples include configuration data, procurement data packages, maintenance data, and training data. The functional requirements for these demonstrations will be initiated during 1986 and early 1987.

Through these lead weapon system programs (weapon system integration prototypes), CALS capabilities will be developed and extended. In addition to enhancing capability, these demonstrations will verify the value of digital logistic information products across a wide range of functions and increase basic knowledge and understanding of the new technologies and their applications.

The most important product of these prototype efforts will be the generic functional specifications through which CALS capabilities will be implemented in weapon system production contracts in 1990 and beyond.

C.3.2 Interfaces Within and Among the DoD Components

The important benefits to be gained from current Military Department and Agency initiatives to automate technical data repositories, and from logistics applications of that data, can be significantly increased through integration and data exchange. As Department and Agency CALS architectures are established, networking will be undertaken. The purpose of this networking is to establish a fully automated infrastructure for logistic technical information to support inventory control points, engineering functions, maintenance depots, and users in the field. Activities that will benefit from this capability include spare parts reprocurement, configuration management, modification/design change planning, maintenance, and training. By the early 1990s, this infrastructure will effectively create configuration management databases for substantially improved configuration control of major end items, subsystems and installed components, software for embedded computers, and other needs.

Advanced distributed data processing techniques, wide area electronic networking and gateways, expert systems, and decision support aids will make logistic databases accessible to users regardless of their physical location. Security safeguards will limit such access to authorized users in both DoD and industry. Through proper planning for such a capability, logistic technical information will be current and accurate, tailored to the user's specific requirements, and available when and where needed.

Maintenance technicians will benefit by having up-to-date technical data, operational performance data, and prior maintenance experience available in a form tailored to the particular end item configuration on which they are working. On-line data bases, supported by expert system technology, will provide diagnostic and repair assistance for both the skilled technician and newly trained mechanic. Some of these tools are already being developed and tested for demonstration over the next two years, with implementation in the field beginning in the late 1980s.

Competitive spares procurement will be significantly enhanced as CALS capabilities are implemented. The automated engineering drawing repositories being implemented throughout DoD over the next four years will greatly facilitate technical data bid package preparation. As these repositories are interfaced using the common data exchange standards that will be demonstrated beginning in 1987, and as digital interfaces between these DoD repositories and defense industry suppliers are implemented, lead time for re-procurement will be significantly reduced from current averages.

C.3.3 Linkage to Computer Aided Manufacturing

One of the most important and far-reaching results of moving from paper-based to digital weapon system support processes is the opportunity to develop the interfaces that will enable the use of flexible manufacturing techniques for reprocurement of spare parts. This is the objective of the Navy's Rapid Acquisition of Manufactured Parts (RAMP) research and development program.

Between 1987 and 1990, hardware and software will be assembled at the South Carolina Research Authority for a demonstration of on-demand manufacturing of spare parts. Small mechanical parts and printed wiring assemblies will be produced using digital product descriptions delivered via data exchange capabilities. In a parallel effort, capabilities will be demonstrated for DoD interface with flexible cells in the industrial base, and the potential for "hands off" acquisition capabilities will be evaluated. As this technology proves successful, it will begin to be implemented selectively during the early 1990s. It will use as source data the digital product definition part models acquired by DoD as CALS capabilities are incorporated into weapon system production programs.

REPORT TO THE
COMMITTEES ON APPROPRIATIONS
OF THE
UNITED STATES HOUSE OF REPRESENTATIVES
AND THE
UNITED STATES SENATE

PART II

AUTOMATION OF TECHNICAL MANUALS AND ORDERS

DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
(ACQUISITION AND LOGISTICS)

WASHINGTON, D.C.

MARCH 28, 1986

1. Requirement for the Report

This report is issued in compliance with the Report on the Committee on Appropriations, Report 99-332, Department of Defense Appropriation Bill, 1986. Report 99-332 directs that the Department of Defense:

- develop common electronic publishing standards and specifications for all Services.
- develop a plan for compatible, totally automated, digital electronic systems for use within the Defense Department and for the goal of reducing the use of paper as a technical documentation medium to 50% by the Services.
- report not later than April 1, 1986 on its plans for expeditiously achieving these objectives.

A primary thrust of these requirements, as indicated in the Report, is the technical manual process.

2. Background

Technical manuals and technical orders (Air Force) are acquired to be utilized in the operation and maintenance of weapons systems and associated support equipment. Additionally, they are utilized in the training of equipment operators and maintenance personnel.

The technical manuals have always been distributed in paper copy with the exception of a microform medium primarily utilized in the Navy. Approximately, 60 percent of Naval Aviation Weapon Systems technical manuals are distributed in 16mm roll microfilm. Over 18,000 microfilm readers and reader/printers were acquired to permit utilization of microfilm as a technical manual distribution medium.

After years of experiencing the many problems associated with use of the paper copy and microfilm medium, the military services equipment operators, maintenance technicians, logisticians, educators, and other users are ready for an improvement over the manual-intensive and often inefficient processes, paper copy or microfilm requires. Additionally, a new breed of computer-literate armed services personnel coming into the ranks, have provided further impetus for the Services to move out in the area of digitizing technical support data. Offices, classrooms and depot maintenance shops appear logical areas for transition from paper copy with a minimum of user problems. Other user environments (certain shipboard areas, flight lines, organization level maintenance, etc.) will require careful development of the role of new media, as well as demonstration of mixes of papercopy and other media to determine the best approach for various user environments.

3. Technical Manual Preparation

Technical manuals and associated changes and revisions are authored and composed by the weapons systems and support equipment contractor during the production phase of a weapons system. Many of these contractors have made investments in computer technology to perform these functions. However, investment is only beginning in the authoring function to permit use of data generated by CAE/CAD. At the end of weapons system production, responsibility for continued changes and revisions to manuals is transitioned from the contractor to the military services. The majority of this effort is accomplished "in-house" at various Army, Navy, Air Force and Marine Corps depots. Some of the change/revision effort (approximately 20%) is contracted out to small business support contractors.

The Military Services, as funding permits, are automating the preparation of changes and revisions to manuals accomplished "in-house." In addition to increased efficiency and productivity, the Services should realize approximately the same preparation cost reduction (25-30%) experienced by contractors through use of computer technology.

The Technical Manual automation initiatives are as follows:

Army: The Army, in conjunction with the Government Printing Office, has developed an automation initiative (The 600S project) for preparation of Army publications and technical manuals. This initiative, utilizes contractor supplied hardware/software installed at all Army publication preparation offices. The 600S Systems are scheduled for installation in FY 86-88.

Navy: The Navy depends primarily on contractor support for required technical manual changes and revisions. As such it does not have an existing major automation initiative for in-house maintenance of technical manuals. However, in areas where changes are prepared in-house, the Navy utilizes existing limited computer technology. The Navy is considering continuation of contractor support for technical manual changes/revisions in lieu of establishing a major in-house preparation initiative due to the human resources (engineers, writers, editors, illustrators) that would be required.

Air Force: The Air Force is currently installing the Automated Technical Order System (ATOS) for automation of in-house preparation of technical order changes/revisions. An ATOS system will be installed at each logistics support center during FY 86-87.

4. Technical Manual Printing/Distribution

The printing and initial distribution of technical manuals is currently accomplished by a Government Printing Office contractor or authorized Service print shops. A quantity of manuals are also printed and stocked in Service supply centers for additional distribution upon request and many of the requests are received from the public, including military support contractors.

The manual preparer (contractor or military service) provides a master copy of the manual, manual change or revision, to the printer for mass replication and distribution. Significant time is lost in arranging for printing and in getting the master copy to the printer (moves from one contractor to another), and scheduling printing. Often, this time exceeds 6-9 months causing an impact on equpment maintenance due to lack of adequate procedures. The Military Services are investigating the use of centralized electronic demand printing equipment to improve printing schedule productivity, reduce printing cost, and eliminate printing for stock. Centralized electronic demand printing is also viewed as an interim step to electronic distribution (paperless environment).

The Army's 600S initiative includes electronic demand printing capability and will be utilized to demand print paper copy of publications prepared on the 600S system.

The Navy is also pursuing an electronic demand printing system (Navy Automated Printing System, (NAPS)). This system will receive a digital database of technical manuals from the preparing contractor and demand print paper copy for required distribution.

The Air Force is not currently pursuing centralized electronic demand printing for paper copy technical orders. The Air Force ATOS system is rapidly progressing to electronic delivery of digital data to the user location, where local print on demand capability will be utilized for paper copy when required.

5. Cost Savings

Potential cost savings for manuals have been identified during the preparation, printing, and distribution stage through use of automated techniques.

5.1 PREPARATION COST: Contractors have reported and passed on cost savings of approximately 25-30% by use of automation in the preparation of technical manuals. The deliverable master copy is composed from a digital database by means of electronic page layout and phototypesetting equipment. The majority of contractors who prepare technical manuals are currently utilizing automated techniques. (Accordingly, the need to provide incentives for prime contractors to automate the technical manual composition process does not appear to be a major priority). Non automated contractors are rapidly acquiring automated equipment to improve their productivity and cost effectiveness and the cost of this technology is steadily decreasing. An area for additional increase in efficiency is further automation of the authoring interface with CAE/CAD, and automation of updating based on design changes. This technology is being continuously explored with the Industry producing our manuals.

5.2 Printing Cost: Although cost savings are projected through use of electronic demand printing, they have not been finalized as yet. Of more significance, is the improvement in the printing cycle, elimination of stock and large volume reprint actions that can be achieved through demand printing.

5.3 DISTRIBUTION COST:

Distribution of paper copy technical manuals entail the cost for mailing/shipping and the cost of labor involved in receipt and storage for use at the user location. Although cost comparisons have not been finalized, as yet, between current paper copy and electronic or other medium distribution, initial indications are that use of a medium other than paper will be initially more expensive due to the cost of retrieval and user reader equipment.

6. COMMON ELECTRONIC PUBLISHING STANDARDS AND SPECIFICATIONS FOR ALL SERVICES:

The Department of Defense has three on-going initiatives for development of common electronic publishing standards and specifications.

6.1 STANDARDIZATION OF THE TECHNICAL MANUAL:

Currently there are over 150 specifications and standards applicable to technical manual requirements. These specifications and standards specify a variety of different types, styles, format and content requirements. This non standard condition creates costly, redundant, and conflicting conditions during preparation. These problems will magnify in an electronic mode.

A tri-service working group is currently chartered to consolidate and standardize technical manual types, format and content requirements. The working group efforts will result in a single standard and an acquisition specification to be utilized for technical manual/technical order acquisitions. The new documents are scheduled for completion in December 1986.

6.2 INTERIM STANDARDS FOR TECHNICAL MANUAL DATABASE: An initial interim military standard defining data format and interface requirements has been developed under Air Force leadership for use in acquiring technical manuals/technical orders in digital form. It is scheduled for completion and promulgation for prototype use by the Services in September 1986.

Utilization of the Interim standard will permit the digital delivery of the text and graphics content of the manual for electronic demand printing, storage, retrieval and update of procedures as appropriate. This proposed military standard is based on use of standards developed by industry for structuring the content and illustrations of technical publications.

6.3 FULLY COORDINATED DATABASE STANDARDS: The DoD Computer Aided Logistic Support (CALS) Steering Group, in December 1985, chartered a Tri-service Working Group to develop and coordinate Military Standards for the digital definition of the logistics documentation needed for support of weapon systems. These standards will allow eventual definition of a integrated digital database that will include product design and fabrication information (engineering drawings, specifications, process standards, and CAD/CAM files) as well as the logistic support analysis data, and maintenance and repair documentation. This information will allow improvements in all aspects of weapon system support, including technical data management.

The National Bureau of Standards has been funded to support the accelerated development of industry accepted standards, that are presently being implemented by commercial data processing hardware and software vendors.

The suite of coordinated standards to be developed by the Working Group will be flexible, with planned revision to accommodate anticipated changes in technology, industry accepted standards, and automation of additional functional applications.

Future projects for the development of documents that contain data preparation and delivery requirements will be reviewed by the CALS Specification and Standardization Working Group, and guidance will be provided to the functional area developing the document on the structure and format of the data requirement. The intent is to reduce the cost of data preparation including hardware, software, data entry and manipulation by adoption of the appropriate standards and coding subsets that can be used for exchanges of logistics technical information between subcontractors and prime contractors, as well as Industry and the Military Services.

The initial steps in the development of this suite of standards have already been taken. The proposed interim standard will begin DoD-wide coordination as soon as it is issued as an Air Force limited coordinated standard. The coordination will include Industry as well as all elements within the DoD. The standard includes a section on digital delivery of manuals using the Standard Generalized Markup Language (SGML) and a referenced set of SGML codes selected to support the markup coding of technical manuals and technical orders. In addition, there are sections on the coding of graphics information in both CAD/CAM and raster formats using the Initial Graphics Exchange Standard (IGES) for CAD/CAM files and CCITT Group 4 facsimile coding for raster graphics data. As additional applications are implemented, sections will be added by amendment or revision.

7. COMPATIBLE, TOTALLY AUTOMATED, DIGITAL ELECTRONIC SYSTEMS FOR TECHNICAL MANUAL PUBLISHING

The technical manual/technical order is one of the many logistics support elements included in DoD's Computer Aided Logistics Support initiatives. On-going automated technical manual publishing initiatives have been included and identified as modules of the CALS initiative. CALS will insure compatibility and interoperability of the various technical manual automation initiatives in conjunction with other logistics support automation initiatives. The data exchange standards effort, reflected herein, is viewed as the paramount vehicle to assure compatibility and interoperability.

The CALS implementation plan, currently in preparation, will be completed in July 1986.

8. REDUCING USE OF PAPER AS A TECHNICAL DOCUMENTATION MEDIUM TO 50% BY THE SERVICES

The technical manual is a vital logistics support element utilized by the equipment operator and maintenance technician in assuring weapons system readiness.

Lack of timely and accurate instructions suitable for use in the user work environment can result in unsafe, or even catastrophic conditions affecting human life and weapons system mission effectiveness. The paper copy manual provides a medium currently acceptable to the user in the various work environments. Paper copy is viewed as expensive, requiring excessive storage space, and places limitations on rapid distribution of changes and revision to published instructions. Consequently, acceptable altnerative mediums have been investigated for a number of years and are urgently desired.

There are on-going initiatives in each of the Services to derive an acceptable medium other than paper copy for technical manual distribution. These efforts have not as yet progressed to the point of definitive decision-making concerning choice of a different distribution mediums for all the DoD users involved at all environments which must be considered. A goal of a 50% reduction in paper distribution appears achievable through distribution of digital data to selected user environments. However, printing capability must be established in these user environments to permit paper copy where necessary.

There are existing technical, social and economical constraints that must be overcome to permit total or near total conversion to a medium other than paper. Due to the large volume (thousands) of technical manual users, the economical contraint of providing reader/printer peripheral for conversion to another medium will be the major pacing factor.

9. THE DoD APPROACH

There is a commitment to apply the best in modern technology to improve the transfer of technical information to our maintenance personnel and others who use technical manuals. The DoD CALS program will facilitate these efforts by providing a strong management thrust to achieve and maintain compatible interfaces and interchange standards for the flow of digital information between contractors, DoD centers, and users. DoD will manage technical documentation efforts to demonstrate and achieve the transitions as quickly as technology, available funding, and user applications allow.

GLOSSARY

A	Army
ADP	Automated Data Processing
AF	Air Force
AIA	Aerospace Industries Association
AIPPS/600S	Army Integrated Publishing and Printing Service
Air CAD/CAM	Aviation Computer Aided Design/Computer Aided Manufacturing
ALC	Air Logistics Center
APADE	Automation of Procurement and Accounting Data Entry
APPS	Automated Publications Production System
ATA	Advanced Tactical Aircraft
ATE	Automated Test Equipment
ATI	Automated Technical Information program
ATOS	Automated Technical Order System
CAD	Computer Aided Design
CADBIT	Computer Aided Design for Built-in Test
CADESS	Computer Aided Data Exchange Standards/Specifications
CADOSS	Computer Aided Development of Standards/Specifications
CADQAD	Computer Aided Development of Quality Assurance Data

CAE	Computer Aided Engineering
CAE Testability	Computer Aided Engineering Testability Tools
CALS	Computer Aided Logistic Support
CALSA	Computer Aided Integrated Logistics Life Cycle Support Analysis
CALS MIO	CALS Management Integration Office
CALS/TIMS	Computer Aided Logistic Support/Technical Information Management System
CAM	Computer Aided Manufacturing
CAMS	Core Automated Maintenance System
CASS	Consolidated Automated Support System
CATIS	Computer Aided Technical Information System
CBAT	Computer Based Aid for Troubleshooting
CECOM	Communications-Electronics Command
CIM	Computer Integrated Manufacturing
CMAS	Computer Based Maintenance Aids System
CRC	Computer Resources Council
CCITT	Consultative Committee on International Telephone and Telegraphy
DA	Department of the Army
DARPA	Defense.Advanced Research Projects Agency
DCA	Defense Communications Agency
DCSLOG	Deputy Chief of Staff for Logistics
DDN	Defense Data Network

DGIS	DoD Gateway Information System
DLA	Defense Logistics Agency
DoD	Department of Defense
DSREDS	Digital Storage and Retrieval Engineering Data System
DEMO	Demonstration
EDASRE	Engineering Drawing Automated Storage and Retrieval Equipment
EDCARS	Engineering Data Computer Assisted Retrieval System
EDMICS	Engineering Drawing Management Information and Control System
EMPS	Electronic Maintenance Publications System
FEEDS	Facilities Engineering Expert and Diagnostic System
FINDER	Functionally Integrated Designating and Referencing System
FMPMIS	Fleet Modernization Program Management Information System
FY	Fiscal Year
GEMS	Graphics Engineering and Mapping System
GIMADS	Generic Integrated Maintenance Diagnostic System
GMAP	Geometric Modeling Applications Project
IDA	Institute for Defense Analyses
IDS	Integrated Design Support System

IDSS	Integrated Diagnostic Support System
IGES	Initial Graphics Exchange Standard
IISS	Integrated Information Support System
IMIS	Integrated Maintenance Information System
IMP	Information Management Program
ILS	Integrated Logistics Support
JPAPS	Job Performance Aids Production System
LIMSS	Logistics Information Management Support System
LOR	Level of Repair
LTI	Logistic Technical Information
LSAR	Logistics Support Analysis Record
LSMP	Logistics Systems Modernization Program
MAISRC	Major Automated Information Systems Review Council
MAP	Manufacturing Automation Protocol
MEDALS	Military Engineering Data Asset Locator
MEIDS	Militarized/Miniaturized Electronic Information Delivery System
MIO	Management Integration Office
MLCAD	Maintenance and Logistics Factors in Computer Aided Design
MPCASS	Modernized Parts Control Automated Support System

N	Navy
NAPPS	Navy Automated Publishing and Printing System
NATO	North Atlantic Treaty Organization
NBS	National Bureau of Standards
NPODS	Navy Print on Demand System
NSIA	National Security Industrial Association
NSTIS	Navy Standard Technical Information System
NTIPS	Navy Technical Information Presentation System
O&M	Operation and Maintenance
OSD	Office of the Secretary of Defense
OSI	Open System Interconnection
PDDI	Product Definition Data Interface
PEAM	Personal Electronic Aid for Maintenance
PED	Procurement Early Development
PM CALS/ATI	Department of the Army Program Manager for CALS
PPBS	Planning, Programming, and Budgeting System
RADC Testability Tools	Rome Air Development Center Testability Laboratory
RAMP	Rapid Acquisition of Manufactured Parts
R&D	Research and Development
R&M	Reliability and Maintainability
RDT&E	Research, Development, Test, and Evaluation
REMIS	Reliability and Maintainability Information System

SGML	Standard Generalized Markup Language
SHARP	Standard Hardware Acquisition and Reliability Program
Ship CAD/CAM	Ship Computer Aided Design/Computer Aided Manufacturing
600/S	See AIPPS/600S
SMARTBIT	Smart Built-in Test
SNAME	Society of Naval Architects & Marine Engineers
SPLICE	Stock Point Logistics Integrated Communications Environment
TD/CMS	Redesign of Technical Data/Configuration Management System
TIMS	Technical Information Management System
TLRN	Technical Logistics Reference Network
UDB	Unified Data Base for Acquisition Logistics
VLSI	Very Large Scale Integration Socketing Capability

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